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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

August, 1997

Data Assimilation
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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-12 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

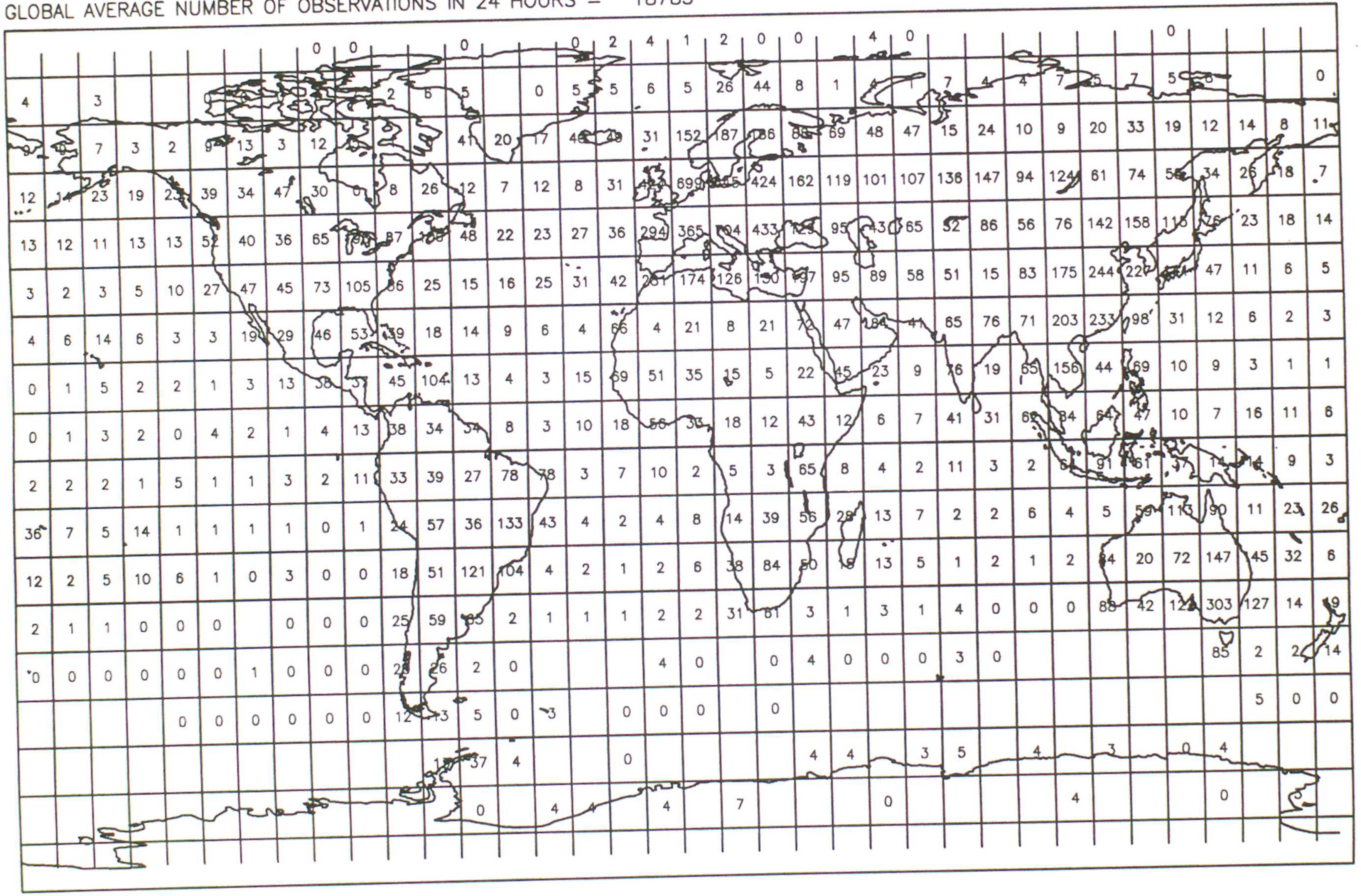
3.PGE ≥ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CG2248	ALL	MSLP	SUR	53	53	100	0.0	0.0	0.0
C6FA6	ALL	MSLP	SUR	60	0	0	1.0	-5.7	5.7
C6JS	ALL	MSLP	SUR	46	0	0	1.4	4.1	4.4
C6LC5	ALL	MSLP	SUR	26	0	0	3.5	-4.4	5.6
DOWVD2D	ALL	MSLP	SUR	45	0	0	1.5	5.4	5.6
ELNW7	ALL	MSLP	SUR	48	38	79	0.5	14.3	14.3
ELUB5	ALL	MSLP	SUR	70	4	6	3.0	-10.2	10.7
EQUZ	ALL	MSLP	SUR	23	23	100	0.0	0.0	0.0
EUAF	ALL	MSLP	SUR	27	0	0	2.6	7.8	8.2
LATI4	ALL	MSLP	SUR	39	0	0	1.2	-4.5	4.7
S6CL	ALL	MSLP	SUR	32	0	0	1.4	5.1	5.3
UFYN	ALL	MSLP	SUR	20	0	0	1.0	-4.4	4.5
UITJ	ALL	MSLP	SUR	47	2	4	1.1	-11.7	11.7
UQDB	ALL	MSLP	SUR	28	1	4	2.0	5.0	5.4
VCLX	ALL	MSLP	SUR	25	19	76	3.0	-10.3	10.8
VCPT	ALL	MSLP	SUR	38	29	76	3.9	-7.2	8.2
VCTD	ALL	MSLP	SUR	24	19	79	5.2	-7.2	8.9
V2SM	ALL	MSLP	SUR	49	0	0	0.7	-4.7	4.7
WCX4874	ALL	MSLP	SUR	20	0	0	5.3	4.9	7.2
WUW2120	ALL	MSLP	SUR	26	9	35	4.3	-5.2	6.8
WUZ7811	ALL	MSLP	SUR	88	22	25	6.5	2.7	7.1
3EIY6	ALL	MSLP	SUR	27	0	0	2.0	11.0	11.2
3FGN3	ALL	MSLP	SUR	35	0	0	1.0	-5.1	5.2
3FKZ3	ALL	MSLP	SUR	58	0	0	1.0	4.8	4.9
31024	ALL	MSLP	SUR	288	130	45	0.8	6.5	6.6
9MCP6	ALL	MSLP	SUR	41	0	0	1.0	7.7	7.8
WIND SPEED									
ELAX2	ALL	SPEED	SUR	48	0	0	3.1	7.3	7.9
ELUU4	ALL	SPEED	SUR	50	2	4	7.1	6.5	9.7
GQEK	ALL	SPEED	SUR	23	0	0	6.0	9.1	10.9
JKPS	ALL	SPEED	SUR	24	0	0	4.4	5.5	7.0
PGDM	ALL	SPEED	SUR	48	0	0	4.5	5.1	6.8
PHHQ	ALL	SPEED	SUR	22	0	0	5.5	8.2	9.8
VRUI2	ALL	SPEED	SUR	20	0	0	3.9	9.0	9.8
V7AI	ALL	SPEED	SUR	29	0	0	5.8	9.5	11.1
YJQK4	ALL	SPEED	SUR	35	0	0	3.3	5.0	6.0
3ELC6	ALL	SPEED	SUR	78	0	0	5.3	9.1	10.6
3EQV8	ALL	SPEED	SUR	26	0	0	5.5	6.6	8.5
3FHE4	ALL	SPEED	SUR	38	0	0	4.6	5.6	7.2
3FSL4	ALL	SPEED	SUR	20	0	0	3.6	6.4	7.4
8PNH	ALL	SPEED	SUR	41	0	0	4.6	9.4	10.4
WIND DIRECTION									
GCCB	ALL	DIRN.	SUR	20	0	0	52.1	-31.4	60.8
P3XC5	ALL	DIRN.	SUR	27	1	4	35.1	-34.3	49.0
VSBU2	ALL	DIRN.	SUR	58	0	0	33.9	123.7	128.2
ZCAA2	ALL	DIRN.	SUR	26	1	4	76.0	56.3	94.6
ZCBE7	ALL	DIRN.	SUR	20	0	0	84.6	-17.5	86.4
3FLG6	ALL	DIRN.	SUR	23	0	0	81.8	-18.1	83.7
43001	ALL	DIRN.	SUR	33	0	0	82.6	10.6	83.3
46145	ALL	DIRN.	SUR	73	0	0	24.2	-31.7	39.9
46181	ALL	DIRN.	SUR	33	0	0	46.2	-46.8	65.7
51010	ALL	DIRN.	SUR	27	0	0	73.2	-36.2	81.7
51303	ALL	DIRN.	SUR	47	0	0	81.0	-23.2	84.3
62302	ALL	DIRN.	SUR	48	0	0	71.7	69.7	100.0

FIGURE 1

AVAILABILITY – SHIP/SYNOP – AUGUST 1997
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 18785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12 14 23 19 23 39 34 47 30 0 8 26 12 7 12 8 31 699 424 162 119 101 107 136 147 94 124 61 74 56 34 26 18 7
13 12 11 13 13 52 40 36 65 190 87 108 48 22 23 27 36 294 365 704 433 123 95 430 65 52 86 56 76 142 158 116 76 23 18 14
3 2 3 5 10 27 47 45 73 105 86 25 15 16 25 31 42 261 174 126 130 197 95 89 58 51 15 83 175 244 227 47 11 6 5
4 6 14 6 3 3 19 29 46 53 39 18 14 9 6 4 66 4 21 8 21 72 47 184 41 65 76 71 203 233 98 31 12 6 2 3
0 1 5 2 2 1 3 13 38 37 45 104 13 4 3 15 69 51 35 15 5 22 45 23 9 76 19 65 156 44 69 10 9 3 1 1
0 1 3 2 0 4 2 1 4 13 38 34 34 8 3 10 18 56 33 18 12 43 12 6 7 41 31 69 84 64 47 10 7 16 11 6
2 2 2 1 5 1 1 3 2 11 33 39 27 78 78 3 7 10 2 5 3 65 8 4 2 11 3 2 61 91 61 37 14 14 9 3
36 7 5 14 1 1 1 1 0 1 24 57 36 133 43 4 2 4 8 14 39 56 28 13 7 2 2 6 4 5 59 113 90 11 23 26
12 2 5 10 6 1 0 3 0 0 18 51 121 104 4 2 1 2 6 38 84 50 18 13 5 1 2 1 2 84 20 72 147 145 32 6
2 1 1 0 0 0 0 0 0 25 59 85 2 1 1 1 2 2 31 81 3 1 3 1 4 0 0 0 88 42 122 303 127 14 19
0 0 0 0 0 0 1 0 0 0 28 26 2 0 4 0 0 4 0 0 0 3 0 85 2 2 14
0 0 0 0 0 0 12 13 5 0 3 0 0 0 0 5 0 0
17 37 4 0 4 4 3 5 4 3 0 4
0 4 4 4 7 0 4 0

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed ($m\ s^{-1}$). :Wind direction (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

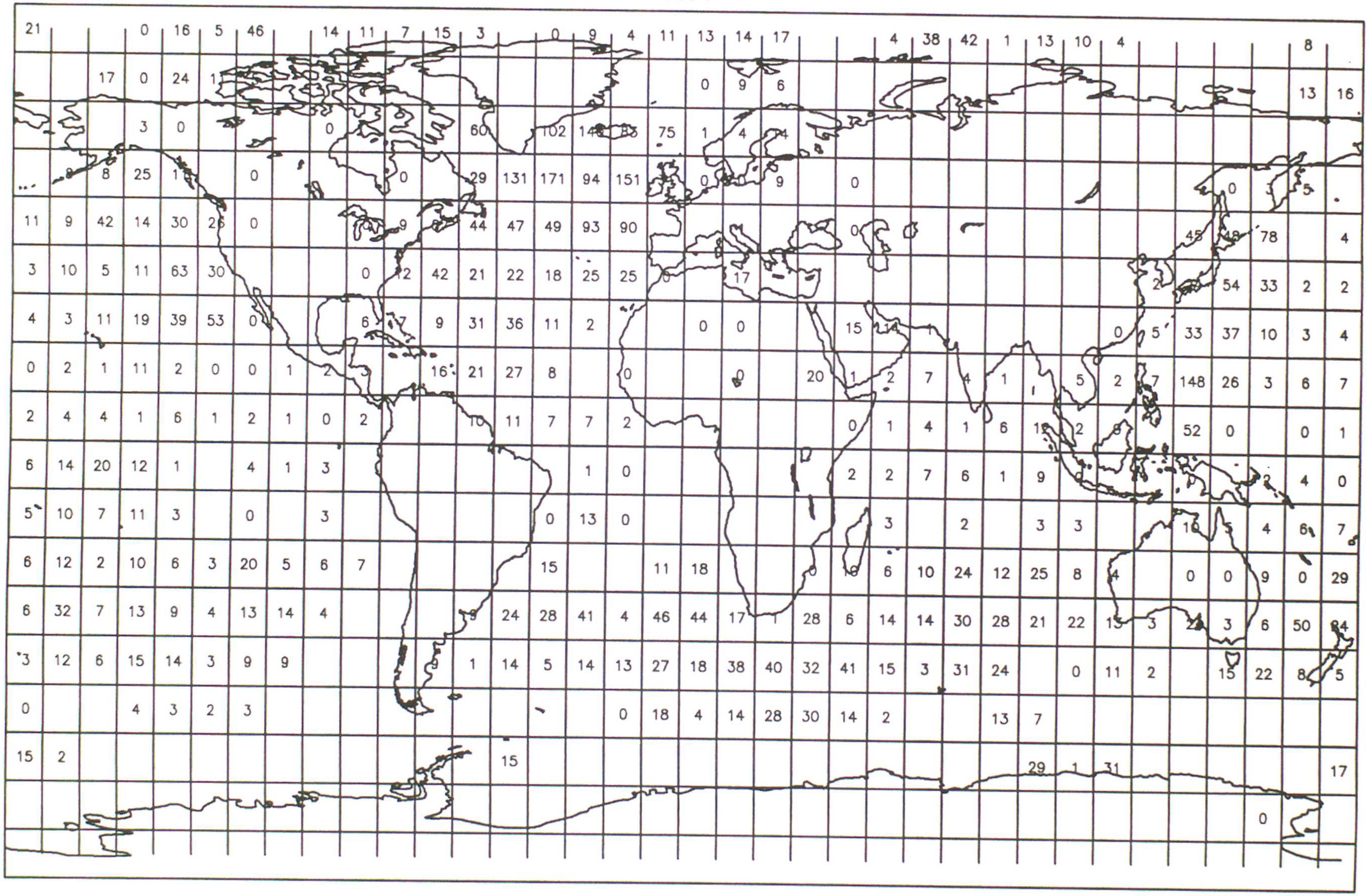
GROSS ERROR LIMIT	:15 hPa	(pressure)	
	:25 $m\ s^{-1}$	(vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.$\lvert$bias$\rvert$	≥ 4 hPa	(pressure),
		≥ 5 $m\ s^{-1}$	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
17654	-39.1	11.5	ALL	MSLP	SUR	156	86	55	4.7	6.6	8.1
23510	4.8	95.1	ALL	MSLP	SUR	95	36	38	6.1	-3.0	6.8
23946	21.7	65.5	ALL	MSLP	SUR	74	74	100	0.0	0.0	0.0
33946	-34.1	-42.1	ALL	MSLP	SUR	272	3	1	5.6	4.9	7.4
34906	-45.6	-40.4	ALL	MSLP	SUR	291	0	0	2.7	-4.9	5.6
46770	47.8	-122.3	ALL	MSLP	SUR	81	0	0	1.1	-11.4	11.5
51671	-2.4	-153.0	ALL	MSLP	SUR	35	35	100	0.0	0.0	0.0
55516	12.8	68.5	ALL	MSLP	SUR	261	0	0	1.2	-4.4	4.6
88888	44.7	-63.6	ALL	MSLP	SUR	20	0	0	0.8	-4.6	4.7
WIND SPEED											
41505	15.7	-51.8	ALL	SPEED	SUR	22	0	0	3.9	18.4	18.8
41506	15.5	-47.3	ALL	SPEED	SUR	27	0	0	4.2	17.0	17.5
41522	9.2	-48.6	ALL	SPEED	SUR	32	3	9	7.9	13.5	15.7
41523	7.9	-55.6	ALL	SPEED	SUR	34	2	6	4.8	13.5	14.3
41524	10.7	-44.5	ALL	SPEED	SUR	28	4	14	6.0	13.5	14.7
41525	10.5	-39.9	ALL	SPEED	SUR	27	0	0	7.1	12.9	14.7
62803	60.9	-11.1	ALL	SPEED	SUR	168	2	1	3.4	-6.5	7.4
WIND DIRECTION											
41505	15.7	-51.8	ALL	DIRN.	SUR	22	0	0	16.0	44.1	47.0
41523	7.9	-55.6	ALL	DIRN.	SUR	34	2	6	37.4	-81.9	90.0
44624	57.9	-21.7	ALL	DIRN.	SUR	701	5	1	61.7	-33.0	70.0
52624	-14.0	139.0	ALL	DIRN.	SUR	53	0	0	37.0	50.2	62.4

AVAILABILITY – DRIFTER – AUGUST 1997
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5304

FIGURE 2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17 0 24 1 0 9 6 13 16
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11 9 42 14 30 26 0 9 44 47 49 93 90 0 45 48 78 4
3 10 5 11 63 30 0 12 42 21 22 18 25 25 0 17 2 54 33 2 2
4 3 11 19 39 53 0 6 7 9 31 36 11 2 0 0 15 14 1 0 5 33 37 10 3 4
0 2 1 11 2 0 0 1 2 3 16 21 27 8 0 0 20 1 2 7 4 1 5 2 7 148 26 3 6 7
2 4 4 1 6 1 2 1 0 2 10 11 7 7 2 0 1 4 1 6 12 2 8 52 0 0 1
6 14 20 12 1 4 1 3 1 0 2 2 7 6 1 9 2 4 0
5 10 7 11 3 0 3 0 13 0 3 2 3 3 16 5 4 6 7
6 12 2 10 6 3 20 5 6 7 15 11 18 0 10 6 10 24 12 25 8 4 0 0 9 0 29
6 32 7 13 9 4 13 14 4 9 24 28 41 4 46 44 17 1 28 6 14 14 30 28 21 22 13 3 22 3 6 50 84
3 12 6 15 14 3 9 9 9 1 14 5 14 13 27 18 38 40 32 41 15 3 31 24 0 11 2 15 22 8 5
0 4 3 2 3 0 18 4 14 28 30 14 2 13 7
15 2 15 29 1 31 17
0

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.¦bias¦	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60010	28.3N	16.5W	2368	S7	88	0	0	68	1.0	-4.9	5.0
60445	36.2N	5.4E	1081	S8	110	0	0	0	0.8	5.2	5.3
60468	35.6N	6.2E	1052	S8	108	108	100	0	0.0	0.0	0.0
60511	35.3N	1.4E	1127	S8	109	107	98	0	0.1	14.8	14.8
60535	34.7N	3.3E	1144	S8	81	3	4	5	1.3	-5.2	5.4
60571	31.6N	2.2W	773	S8	115	0	0	0	1.1	-4.0	4.1
60670	24.6N	9.5E	1054	S8	88	1	1	99	1.1	8.7	8.8
61233	15.2N	7.3W	265	M	74	0	0	0	1.4	-4.0	4.2
62402	26.2N	32.7E	77	M	39	38	97	0	0.0	11.1	11.1
63330	13.5N	39.5E	2212	MS	51	1	2	0	0.8	-4.7	4.8
63333	11.1N	39.7E	1916	MS	79	1	1	1	0.9	6.9	7.0
63451	8.7N	39.0E	1876	MS	50	1	2	2	1.3	-4.0	4.2
63453	8.8N	39.8E	1062	S	48	6	13	0	1.6	11.9	12.0
63478	5.1N	44.6E	320	MS	51	0	0	0	0.8	6.2	6.3
68014	19.6S	18.1E	1411	S8	88	0	0	67	0.9	-5.4	5.5
68016	19.3S	12.7E	16	MS	85	1	1	29	2.1	4.9	5.3
68038	20.5S	26.0E	903	8	57	0	0	16	2.2	4.2	4.7
68442	29.1S	26.3E	1354	S8	106	0	0	0	0.9	-5.4	5.5
68488	28.4S	31.1E	1279	S8	68	68	100	0	0.0	0.0	0.0
68752	32.8S	27.4E	524	S8	98	0	0	0	1.1	-8.4	8.5

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	61	61	100	0	0.0	0.0	0.0
30554	54.5N	113.6E	995	MS	58	0	0	2	1.1	10.3	10.4
35173	51.6N	69.8E	620	MS	59	59	100	0	0.0	0.0	0.0
40701	39.3N	44.4E	1470	MS	100	0	0	1	1.3	6.0	6.1
40719	37.2N	49.6E	37	MS	90	0	0	4	1.4	4.4	4.6
40743	36.2N	57.7E	941	MS	120	0	0	1	1.1	-5.0	5.1
40762	35.3N	59.2E	1333	MS	118	20	17	2	2.5	-13.4	13.6
40763	35.2N	58.5E	1060	MS	46	1	2	2	1.2	-6.1	6.2
40783	32.4N	49.7E	1972	MS	95	0	0	0	1.1	-5.4	5.5
40789	33.8N	55.1E	921	MS	83	0	0	0	1.2	8.3	8.4
40798	32.3N	50.9E	1991	MS	94	0	0	0	1.0	-7.3	7.4
40836	30.8N	51.7E	1880	MS	82	1	1	0	0.9	7.5	7.6
40859	29.0N	53.7E	1383	MS	86	0	0	0	1.1	8.7	8.8
41254	23.1N	57.7E	1755	S8	87	87	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	33	1	3	3	2.1	5.6	6.0
41466	13.7N	44.1E	1385	8	22	0	0	0	0.7	-6.1	6.1
44298	46.4N	108.2E	1286	MS	90	1	1	33	1.5	4.7	4.9
44416	28.6N	81.6E	720	MS	58	1	2	3	1.6	4.5	4.8
44477	27.0N	87.4E	1445	S8	51	51	100	0	0.0	0.0	0.0
52602	38.8N	93.4E	2734	S	124	0	0	1	2.3	-5.8	6.2
54587	39.1N	123.2E	-9999	M	98	1	1	3	1.1	-4.1	4.2
56444	28.5N	98.9E	3488	S	111	111	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	113	0	0	3	2.3	7.3	7.7

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	23	0	0	0	0.8	-6.4	6.4
80315	3.0N	75.3W	443	MS	31	0	0	19	1.6	-4.5	4.8
82704	7.6S	72.7W	170	MS	85	0	0	0	1.3	-4.4	4.6
82825	8.8S	63.9W	95	MS	62	5	8	40	3.6	-10.4	11.0
83214	10.3S	54.9W	285	MS	56	3	5	5	1.1	-7.2	7.3
83235	12.4S	46.4W	660	MS	87	0	0	1	1.1	7.0	7.1
83295	13.4S	39.9W	755	MS	57	1	2	82	0.6	-4.3	4.3
83332	14.1S	46.4W	950	MS	87	35	40	0	0.6	14.1	14.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83408	14.3S	43.8W	556	MS	78	1	1	0	1.0	10.8	10.8
83423	16.7S	49.3W	729	MS	89	0	0	0	0.9	-5.1	5.2
83488	17.8S	42.9W	1097	MS	79	79	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	53	0	0	2	1.5	-7.4	7.6
83587	19.9S	43.9W	850	MS	80	0	0	0	1.3	-8.5	8.6
83689	21.3S	43.8W	1171	MS	68	1	1	1	1.1	4.3	4.4
83704	22.3S	53.9W	369	MS	55	16	29	27	0.9	-10.5	10.5
83773	23.1S	48.9W	793	S	37	0	0	3	2.0	-5.3	5.7
83836	25.5S	50.6W	837	MS	86	0	0	1	1.4	-4.2	4.4
83916	28.2S	51.5W	806	MS	87	1	1	0	1.1	-5.1	5.2
84401	5.2S	80.6W	55	MS	85	0	0	4	1.5	4.4	4.6
84455	6.5S	76.4W	282	MS	59	0	0	0	1.4	6.6	6.7
84472	7.1S	78.5W	2622	S	44	0	0	0	1.3	-5.7	5.8
84501	8.1S	79.0W	30	MS	82	1	1	4	1.9	4.8	5.2
84542	9.4S	77.6W	2760	S	29	1	3	0	1.4	4.1	4.3
84686	13.6S	72.0W	3249	S	94	0	0	1	1.6	-4.3	4.6
84782	18.1S	70.3W	469	MS	84	0	0	1	2.7	6.9	7.4
85312	19.8S	63.9W	992	S	36	3	8	22	2.2	-7.9	8.2
85394	22.8S	64.3W	381	MS	37	0	0	3	3.1	4.2	5.2
85406	18.3S	70.3W	58	M	119	0	0	2	2.1	5.5	5.9

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71094	66.7N	61.4W	722	MS	121	0	0	12	1.3	-4.2	4.4
76151	29.2N	118.3W	23	MS	22	0	0	0	3.8	5.2	6.4
76539	22.1N	101.0W	1870	MS	52	0	0	0	0.9	-4.3	4.4
76634	20.1N	98.4W	2135	MS	41	0	0	80	1.4	-4.6	4.8
76658	19.2N	103.7W	494	MS	26	0	0	0	1.2	5.4	5.5
76698	19.6N	88.0W	20	MS	50	0	0	50	2.5	-6.2	6.7
76762	17.5N	99.5W	1865	MS	40	40	100	0	0.0	0.0	0.0
78627	15.3N	91.5W	1901	S	34	0	0	3	1.2	4.4	4.6

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91339	5.5N	153.8E	3	MS	47	0	0	19	3.3	-6.9	7.6
94955	41.6S	145.7E	684	MS	157	157	100	0	0.0	0.0	0.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	124	124	100	0	0.0	0.0	0.0
04313	80.6N	13.7W	10	MS	97	1	1	64	4.9	6.0	7.7
11024	48.4N	15.4E	860	S8	122	2	2	0	0.8	-12.6	12.6
16020	46.5N	11.3E	1461	MS	111	111	100	0	0.0	0.0	0.0
16227	41.9N	13.6E	655	MS	123	123	100	0	0.0	0.0	0.0
16549	39.1N	8.3E	12	MS	123	0	0	0	0.9	-4.4	4.5
16614	40.4N	21.3E	604	MS	88	0	0	0	0.9	-7.4	7.5

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89108	89.0S	0.3W	2754	S	100	10	10	17	5.0	4.5	6.7
89324	80.0S	120.0W	1530	S	100	11	11	24	5.5	-5.6	7.8
89332	82.6S	137.1W	549	S	31	0	0	19	6.6	-0.9	6.7
89345	89.7S	148.8W	620	S	100	83	83	25	6.3	-5.8	8.6
89606	78.5S	106.9E	3490	S7	113	28	25	0	4.2	7.4	8.5
89744	74.0S	43.0E	3353	S	95	2	2	35	4.0	6.9	8.0
89774	73.4S	76.8E	2565	S	89	0	0	9	3.8	5.1	6.4
89860	74.2S	160.3E	1772	S	91	24	26	42	5.5	-6.2	8.3

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:All hours combined.
Level(s) monitored		:70.0 - 500.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP $\geq$ 20

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	98	2	8	1.9	0.6	120	0	13	0	15.1	1.0
AAL	4720	0	1	1.8	0.1	5100	0	2	0	7.8	1.1
AAR	1875	1	2	1.7	-0.1	2037	0	3	0	8.2	1.0
ACA	2552	1	3	2.2	0.2	2627	0	2	0	6.7	0.9
ACI	38	3	3	2.6	1.4	38	0	3	0	9.0	0.5
AEA	777	1	100	2.7	1.1	1009	0	3	0	8.3	1.2
AEL	645	1	3	1.7	-0.6	881	0	4	0	7.9	1.0
AEY	121	0	0	1.5	0.7	157	0	2	0	7.0	1.5
AFL	323	0	5	2.4	0.9	322	0	4	1	8.8	1.4
AFR	1616	1	8	2.0	0.3	1667	0	8	0	9.3	1.2
AIH	370	1	3	1.7	0.2	399	0	5	0	9.0	1.5
AJM	46	4	4	1.1	0.0	45	0	7	0	11.4	0.5
AMT	544	1	10	3.3	2.0	650	0	4	0	7.6	0.4
AMX	294	2	4	1.6	0.1	318	0	4	0	9.0	1.3
ANA	1070	1	2	1.7	-0.2	1173	0	4	0	9.0	1.2
ANZ	2383	2	4	1.8	0.3	2404	0	4	1	8.4	0.8
AOM	776	2	5	1.8	0.9	790	0	5	0	8.5	1.2
ARP	157	1	7	2.6	0.8	147	0	5	3	8.0	2.3
AUA	86	1	3	1.9	-0.5	86	0	6	0	10.0	2.1
AVA	331	1	2	1.7	0.4	470	0	2	0	7.5	1.4
AVN	42	2	5	1.7	0.4	42	0	0	0	6.3	0.3
AXA	72	3	7	3.2	2.2	71	1	8	3	9.7	0.0
AZA	458	2	7	2.5	0.5	425	0	2	0	7.6	1.1
BAL	794	1	12	1.8	-0.3	997	0	11	0	8.0	1.1
BAW	1649	0	9	2.1	0.0	1692	0	10	0	7.8	1.1
BBB	31	0	0	1.4	0.4	46	0	4	2	8.4	0.0
BWA	334	1	100	2.8	2.0	361	0	5	0	8.7	0.7
CAL	1747	1	1	1.6	0.1	1943	0	3	0	8.4	1.1
CCA	109	3	8	2.4	0.1	140	1	100	0	11.1	0.7
CDN	1734	0	1	1.9	0.1	2114	0	3	1	7.8	0.9
CES	264	1	2	1.6	0.3	369	0	5	0	9.7	1.4
CFG	906	1	3	1.9	-0.8	1183	0	3	0	7.9	0.6
CKS	171	1	2	2.6	1.8	188	1	3	0	7.0	0.9
CKT	253	0	5	1.8	0.7	293	0	5	0	8.8	1.9
CLX	295	0	1	2.3	-0.5	306	0	3	0	8.1	0.5
CMI	705	1	2	1.7	0.5	767	0	5	2	7.8	1.7
CMM	496	0	1	2.0	0.3	499	0	2	1	6.2	0.8
COA	1320	1	2	1.8	0.6	1430	0	3	0	8.5	0.9
CPA	37	3	3	1.7	-0.5	42	0	0	0	7.0	-0.4
CRL	636	1	5	2.0	0.3	738	0	4	0	8.3	1.1
CSN	43	0	2	1.9	0.0	69	0	6	0	8.8	1.5
CTB	173	1	1	2.1	0.0	225	0	2	0	7.3	2.2
CTM	126	1	16	2.3	-0.5	131	0	18	0	13.1	1.1
CUB	601	1	9	2.3	1.3	785	0	9	0	9.2	1.9
DAF	20	0	0	2.3	0.4	20	0	0	0	7.1	1.2
DAL	4702	0	2	1.9	0.5	5130	0	2	0	7.8	0.7
DHL	225	4	100	3.6	-1.7	227	0	6	0	10.2	1.7
DLH	3868	1	7	2.2	0.2	3998	0	9	2	7.3	1.1
DOA	21	0	0	1.4	0.7	36	0	3	0	7.0	2.6
EIA	178	1	2	1.8	0.5	177	0	5	1	11.0	0.0
EIN	20	0	5	2.4	-0.6	20	0	5	0	10.2	-0.6
ELY	189	0	5	1.7	-0.3	187	0	8	0	7.8	1.0
EVA	1561	1	1	1.6	-0.5	1821	0	3	0	8.8	1.0
EWW	125	3	100	2.3	0.0	129	0	100	0	14.4	3.5
FDX	1165	1	2	1.6	0.6	1228	0	3	0	8.4	0.8
FIN	593	0	1	2.2	0.5	591	0	4	2	7.9	0.5
FJI	512	5	7	1.8	1.0	496	0	4	1	8.7	0.6
FOM	136	0	1	2.0	-0.1	136	0	1	0	7.3	0.1
GAF	118	3	3	2.3	-0.2	120	0	3	1	8.1	0.8

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GCO	20	0	10	1.7	0.2	27	0	19	0	10.5	-2.1
GHA	63	0	2	1.3	0.4	58	0	7	0	8.2	0.8
GIA	155	1	3	1.7	0.8	185	0	6	1	12.6	1.7
GTI	72	0	3	2.4	1.6	77	0	4	0	9.7	0.3
HAL	1458	0	2	1.6	0.4	1723	0	3	0	8.2	0.5
HLF	109	3	6	1.8	-0.5	149	0	4	1	7.4	1.6
HRH	52	2	6	2.0	1.4	52	0	4	0	7.4	-0.8
IBE	2618	1	10	1.8	0.7	3057	0	10	0	7.8	1.0
ICE	701	0	2	2.0	0.0	706	1	2	0	6.8	0.6
JAA	38	0	3	2.2	1.5	36	0	3	3	8.3	2.5
JAL	6341	0	1	1.7	0.3	6811	0	3	1	8.0	1.3
JAZ	44	0	2	1.5	0.9	45	0	2	2	6.3	1.9
KAL	3781	1	2	1.8	-0.1	4021	0	4	0	9.1	1.1
KLM	2945	0	2	1.9	0.3	3312	0	2	0	7.5	1.1
LDA	157	1	7	1.9	-0.8	210	0	4	0	6.4	0.5
LDI	403	0	16	1.9	-1.0	536	0	14	0	8.3	0.8
LIB	348	1	3	1.7	0.8	492	1	4	0	7.8	1.6
LKR	80	1	4	1.5	0.8	87	0	2	0	6.5	0.1
LOT	424	0	3	2.5	-1.2	422	0	1	0	7.4	0.5
LTU	764	1	6	1.9	0.2	899	0	7	0	7.9	1.3
MAS	256	1	2	1.7	0.1	271	0	1	0	7.7	1.4
MDA	201	0	1	1.7	0.1	213	0	2	0	9.2	0.6
MON	31	0	3	1.7	0.6	33	0	9	0	9.1	1.8
MPH	888	0	2	2.0	-0.2	1032	0	3	0	7.5	0.7
NCA	490	0	1	1.7	0.2	533	0	5	2	9.3	0.9
NWA	9328	1	2	1.8	0.5	11070	0	3	1	8.0	1.1
PAC	129	3	8	2.2	0.8	139	1	7	0	9.6	0.5
PAL	966	1	2	1.6	-0.1	1074	0	3	2	8.1	1.0
PAO	203	0	2	1.5	0.1	205	0	2	0	7.5	0.2
QFA	1448	1	2	1.7	0.4	1468	0	3	0	9.2	0.9
RAF	102	0	0	1.9	0.7	102	0	2	0	10.3	3.2
RAM	83	1	6	1.8	-0.5	113	1	9	1	8.7	-0.2
RCH	324	4	98	2.7	0.6	346	0	98	0	11.5	2.4
RJA	133	1	3	1.4	0.7	135	0	5	0	9.2	0.0
RKA	176	0	1	1.3	0.1	122	0	2	0	8.4	2.8
ROY	386	1	3	2.0	0.0	396	0	5	0	8.7	1.1
RRR	129	2	15	2.7	-0.4	132	0	13	0	10.2	1.4
SAA	236	2	2	1.7	-0.2	265	0	2	0	7.4	1.4
SAB	72	0	1	1.3	-0.3	69	0	3	0	6.2	1.7
SAS	1360	0	1	2.3	0.2	1358	0	2	1	7.1	0.1
SCX	217	0	0	1.1	0.4	200	0	2	0	6.0	0.5
SIA	1042	1	1	1.7	-0.6	1372	0	3	0	8.5	1.0
SJM	39	0	10	3.8	-3.1	47	2	17	2	10.2	1.8
SLR	220	0	20	1.7	-0.4	271	0	16	0	6.4	1.0
SOL	38	3	3	1.2	0.7	37	0	3	3	6.5	-0.1
SPP	370	0	4	1.9	0.6	528	0	3	0	7.1	1.1
SSV	128	0	2	1.8	0.1	129	1	3	0	5.5	0.4
SVA	194	0	8	2.5	-0.2	202	0	100	0	13.2	2.6
SWR	114	1	4	1.7	0.1	113	0	5	1	9.9	1.7
TAP	700	1	5	1.5	-0.2	917	0	5	0	8.7	1.1
THA	305	0	1	1.7	-0.6	425	0	5	0	9.1	1.1
THY	25	0	20	3.2	1.1	25	0	24	0	11.7	4.9
TOW	306	0	3	2.1	0.1	310	0	4	0	8.4	1.6
TSC	222	1	7	2.5	0.5	226	1	6	0	9.8	1.2
TWA	1749	1	3	2.1	0.1	1919	0	3	0	9.0	1.4
UAL	11812	0	3	2.0	0.2	12785	0	2	0	7.4	0.9
ULE	286	1	3	1.9	0.7	383	0	4	0	7.3	1.1
UPS	380	2	16	2.5	0.7	407	0	12	0	7.9	0.9
USA	350	0	3	1.9	0.2	357	0	4	0	9.6	1.4

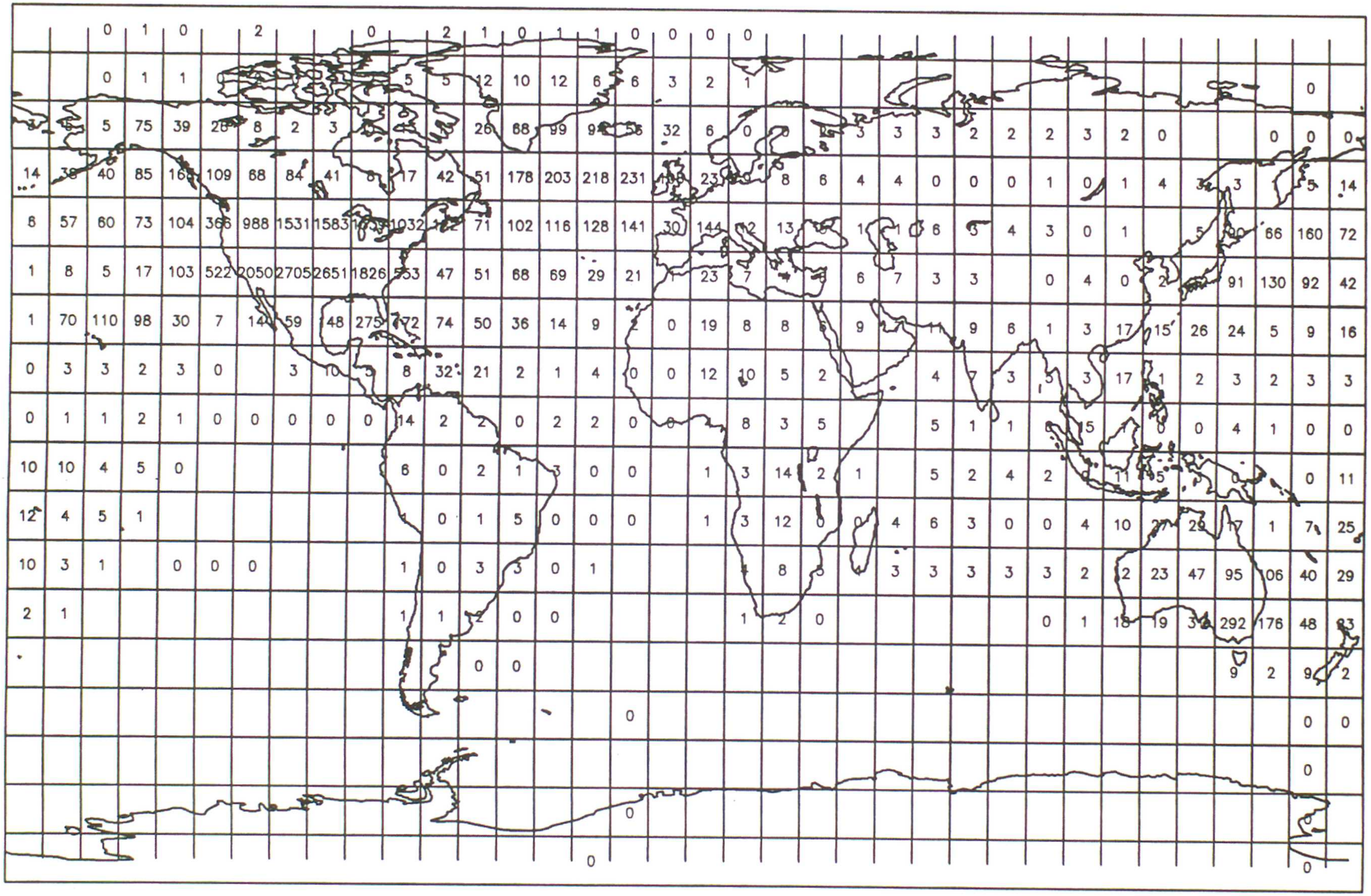
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
VIR	182	1	2	2.1	-0.1	182	0	1	0	7.7	2.0
VKG	89	1	4	2.2	1.0	92	0	3	0	9.9	1.0
VRG	55	2	4	1.5	0.6	72	1	6	0	8.4	1.9
VSP	139	2	4	2.2	1.0	220	0	4	0	10.2	1.4
WOA	101	0	5	1.8	0.7	110	0	6	0	8.3	2.0
AN	20118	0	0	1.3	0.1	19993	0	0	0	6.6	1.2
BA	15382	0	0	1.3	0.4	15351	0	12	0	6.7	1.3
IT	309	0	0	0.8	0.0	309	0	0	0	5.7	-0.4
KL	8968	4	4	1.3	0.5	8960	0	4	0	9.2	1.8
LH	2671	0	1	1.5	0.3	2642	0	1	0	6.7	1.6
MK	2166	0	2	1.5	1.1	2155	0	1	0	7.4	1.6
QF	4820	0	0	1.2	0.3	4818	0	0	0	6.3	1.2
SA	2905	0	1	1.3	0.7	2902	0	1	0	7.3	1.4
SV	774	5	5	1.2	0.8	773	1	3	0	6.6	1.8
N	519	3	5	2.6	1.1	525	0	4	0	8.5	0.9
ACAR	468385	0	1	1.0	0.1	467729	0	0	0	5.7	0.8

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA

AUGUST 1997

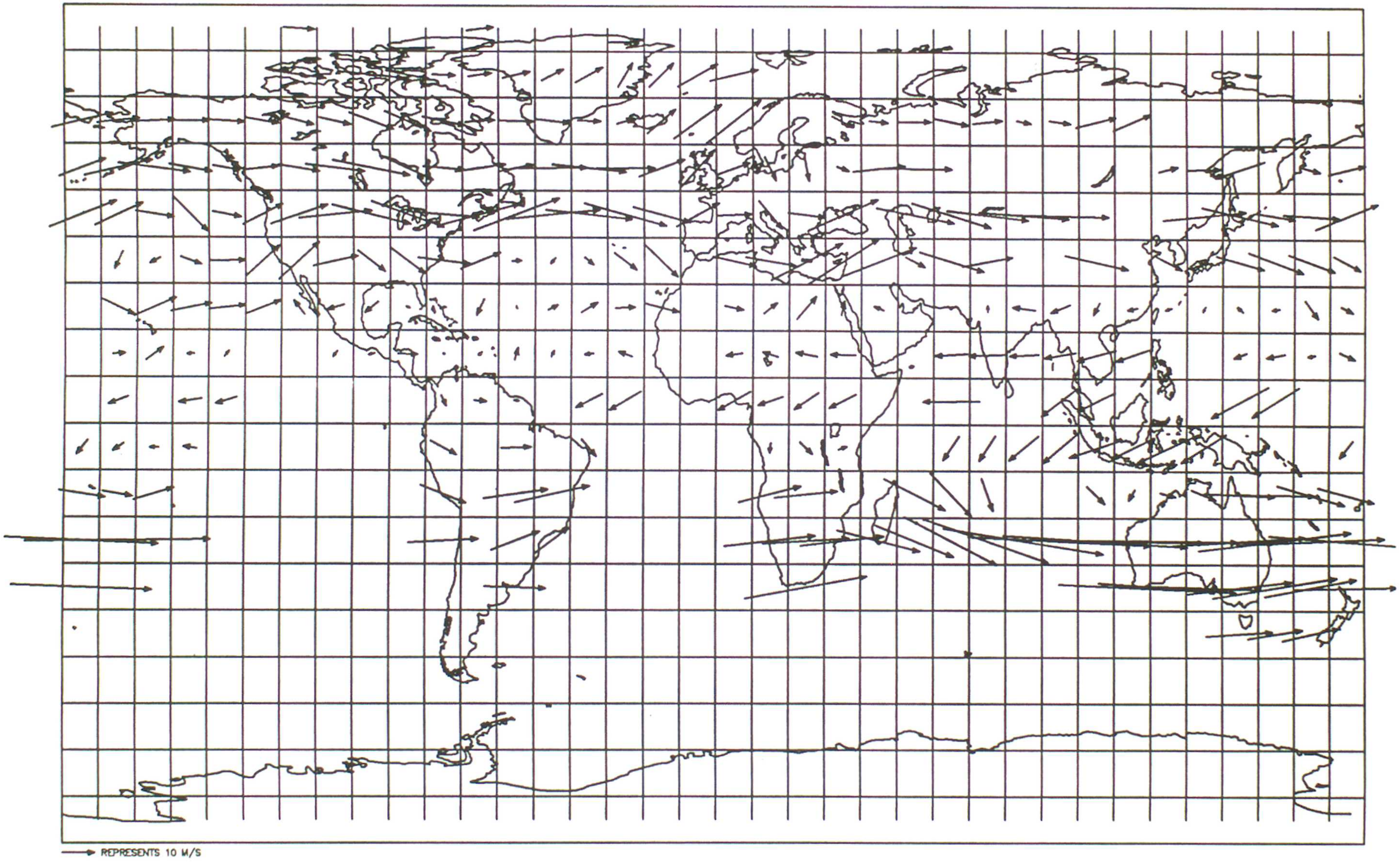
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

FIGURE 3


0 1 0 2 0 2 1 0 1 1 0 0 0 0
0 1 1 5 5 12 10 12 6 6 3 2 1 0
5 75 39 28 8 2 3 26 68 99 94 58 32 6 0 3 3 3 2 2 2 3 2 0 0 0 0
14 38 40 85 16 109 68 84 41 8 17 42 51 178 203 218 231 23 8 6 4 4 0 0 0 1 0 1 4 3 3 5 14
8 57 60 73 104 366 988 1531 1583 1032 71 102 116 128 141 30 144 12 13 1 6 3 4 3 0 1 5 66 160 72
1 8 5 17 103 522 2050 2705 2651 1826 553 47 51 68 69 29 21 23 7 6 7 3 3 0 4 0 2 91 130 92 42
1 70 110 98 30 7 14 59 48 275 72 74 50 36 14 9 2 0 19 8 8 9 9 6 1 3 17 15 26 24 5 9 16
0 3 3 2 3 0 3 10 8 32 21 2 1 4 0 0 12 10 5 2 4 7 3 5 3 17 1 2 3 2 3 3
0 1 1 2 1 0 0 0 0 0 14 2 2 0 2 2 0 8 3 5 5 1 1 15 0 0 4 1 0 0
10 10 4 5 0 6 0 2 1 3 0 0 1 3 14 2 1 5 2 4 2 11 5 0 11
12 4 5 1 0 1 5 0 0 0 1 3 12 0 4 6 3 0 0 4 10 27 29 17 1 7 25
10 3 1 0 0 0 1 0 3 3 0 1 8 3 3 3 3 3 2 12 23 47 95 106 40 29
2 1 1 1 2 0 0 1 2 0 0 1 18 19 34 292 176 48 83
0 0 9 2 9 2
0 0 0
0
0 0
0 0

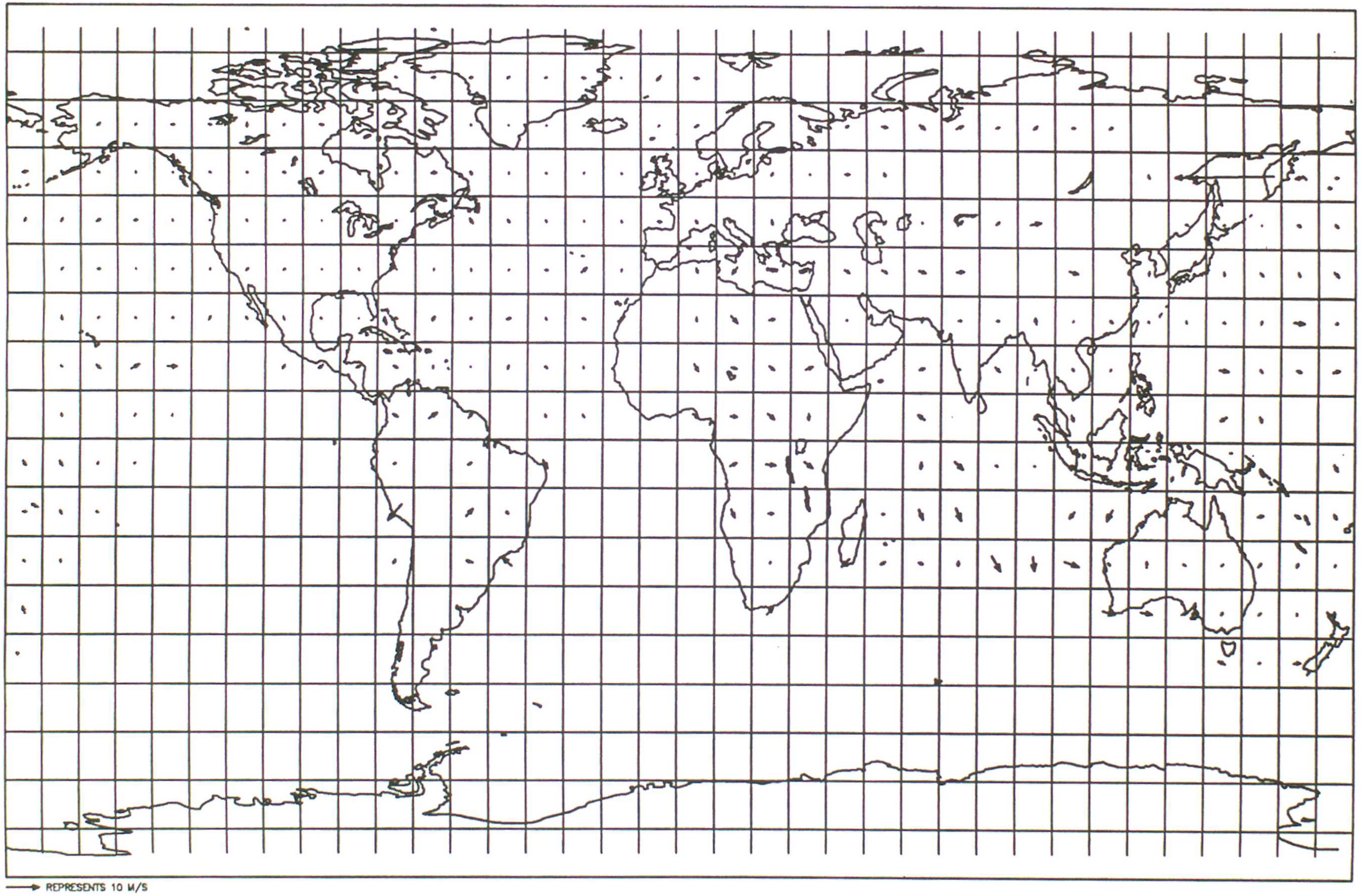
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA
AUGUST 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4

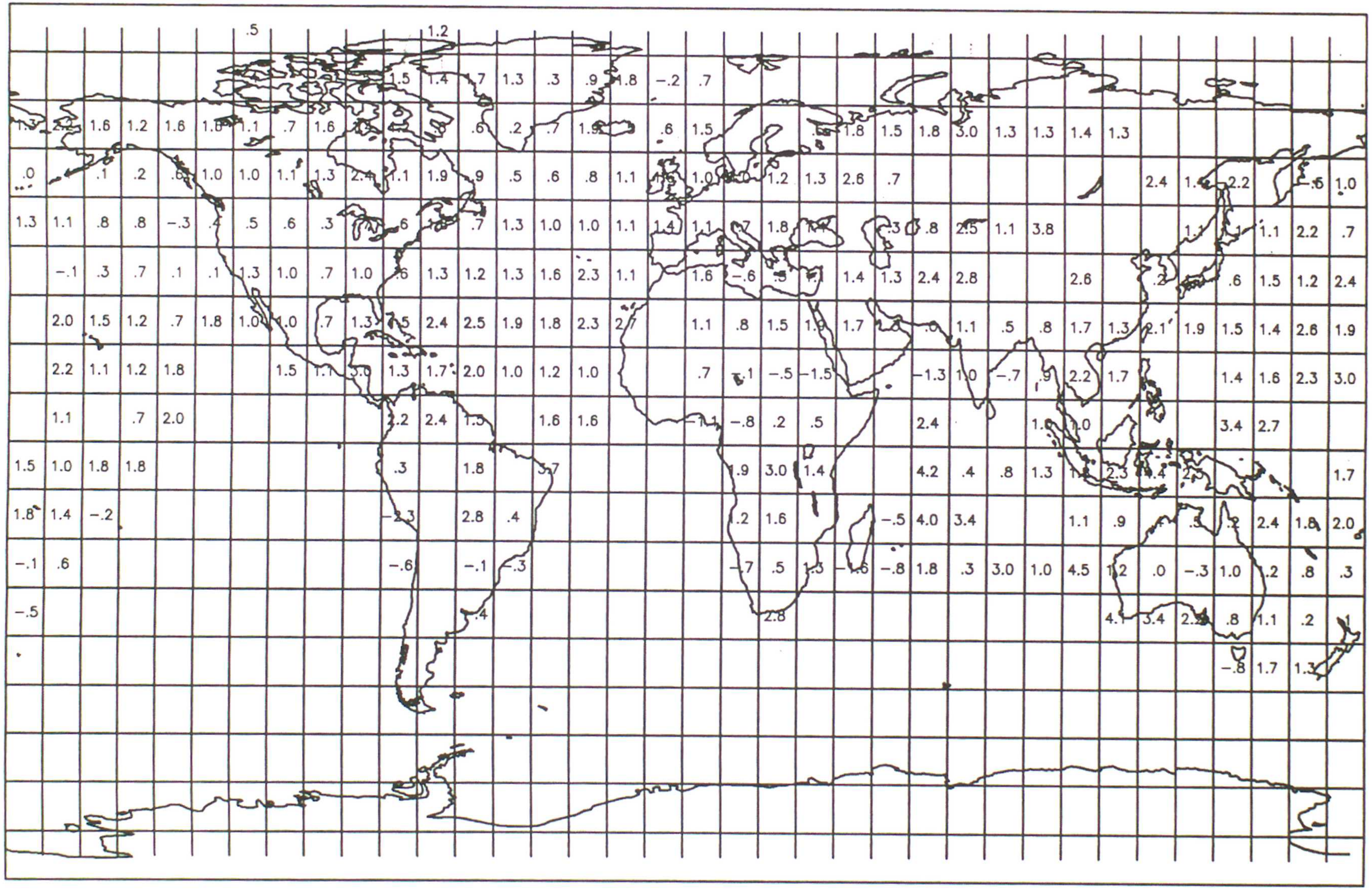


AIRCRAFT MEAN O–B WINDS BETWEEN 70 AND 500 HPA
AUGUST 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 5



AIRCRAFT : MEAN O-B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
AUGUST 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


.5 1.2
1.5 1.4 .7 1.3 .3 .9 1.8 -.2 .7
1.3 2.2 1.6 1.2 1.6 1.8 1.1 .7 1.6 .6 .2 .7 1.5 .6 1.5 1.8 1.5 1.8 3.0 1.3 1.3 1.4 1.3
.0 .1 .2 .6 1.0 1.0 1.1 1.3 2.4 1.1 1.9 .9 .5 .6 .8 1.1 1.5 1.0 1.0 1.2 1.3 2.6 .7 2.4 1.4 2.2 .5 1.0
1.3 1.1 .8 .8 -.3 .4 .5 .6 .3 .6 1.8 .7 1.3 1.0 1.0 1.1 1.4 1.1 .7 1.8 1.4 .3 .8 2.5 1.1 3.8 1.1 1.1 2.2 .7
-.1 .3 .7 .1 .1 1.3 1.0 .7 1.0 .6 1.3 1.2 1.3 1.6 2.3 1.1 1.6 -.6 .5 .1 1.4 1.3 2.4 2.8 2.6 .2 .6 1.5 1.2 2.4
2.0 1.5 1.2 .7 1.8 1.0 1.0 .7 1.3 .5 2.4 2.5 1.9 1.8 2.3 2.7 1.1 .8 1.5 1.9 1.7 .6 1.1 .5 .8 1.7 1.3 2.1 1.9 1.5 1.4 2.8 1.9
2.2 1.1 1.2 1.8 1.5 1.1 3.0 1.3 1.7 2.0 1.0 1.2 1.0 .7 .1 -.5 -1.5 -1.3 1.0 -.7 .9 2.2 1.7 1.4 1.6 2.3 3.0
1.1 .7 2.0 2.2 2.4 1.5 1.6 1.6 -1.1 -.8 .2 .5 2.4 1.0 1.0 3.4 2.7
1.5 1.0 1.8 1.8 .3 1.8 3.7 1.9 3.0 1.4 4.2 .4 .8 1.3 1.8 2.3 1.4 2.5 1.7
1.8 1.4 -.2 -2.3 2.8 .4 1.2 1.6 -.5 4.0 3.4 1.1 .9 .3 .2 2.4 1.8 2.0
-.1 .6 -.6 -.1 -.3 -.7 .5 1.3 -1.6 -.8 1.8 .3 3.0 1.0 4.5 1.2 .0 -.3 1.0 .2 .8 .3
-.5 .4 2.8 4.1 3.4 2.3 .8 1.1 .2 .1
-.8 1.7 1.3

AIRCRAFT : RMS O–B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
AUGUST 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

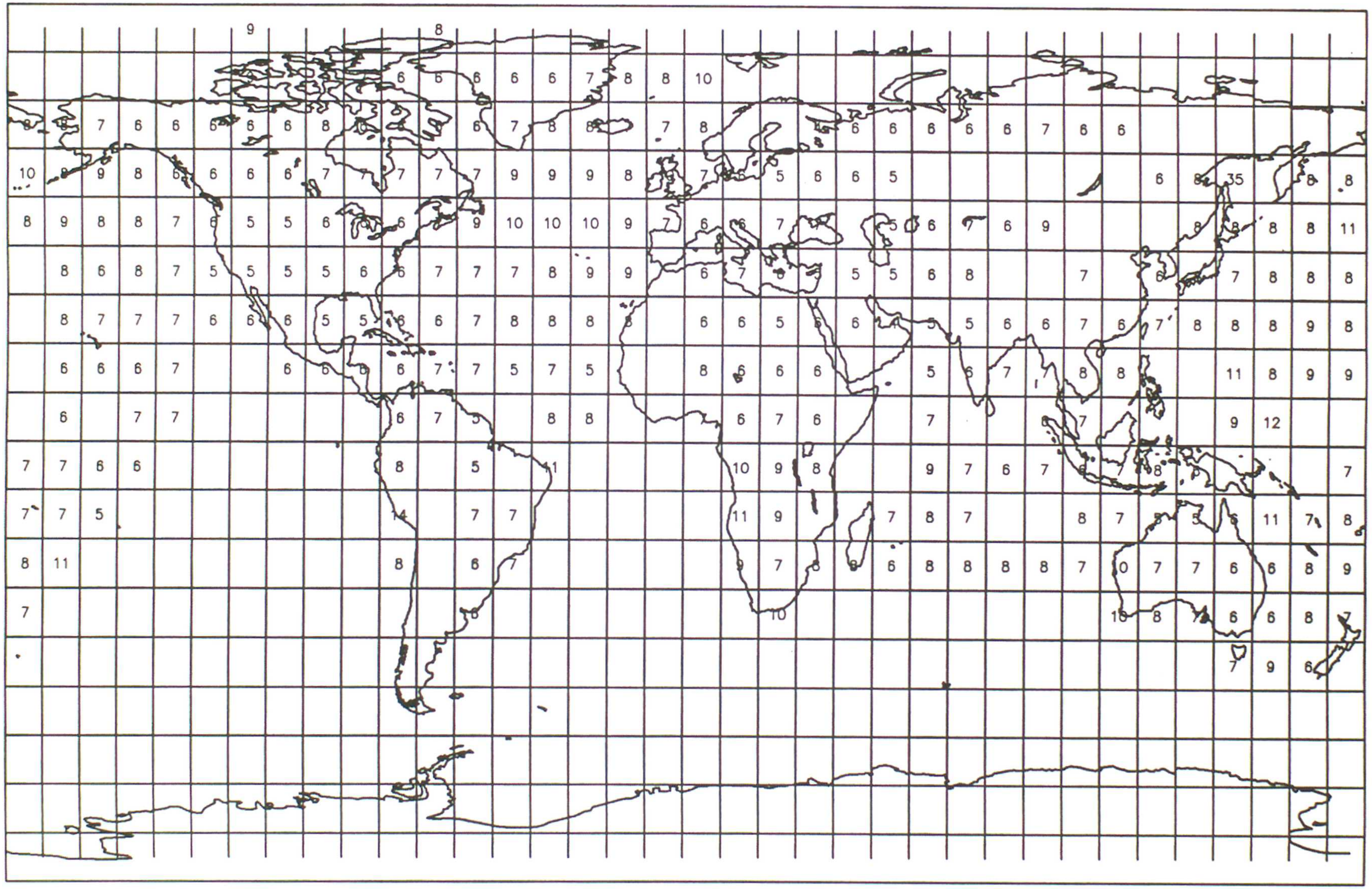


TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 30.0 hPa

Element monitored :GEOPOTENTIAL HEIGHT IN metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown duringperiod.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.1

SELECTION CRITERIA : ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

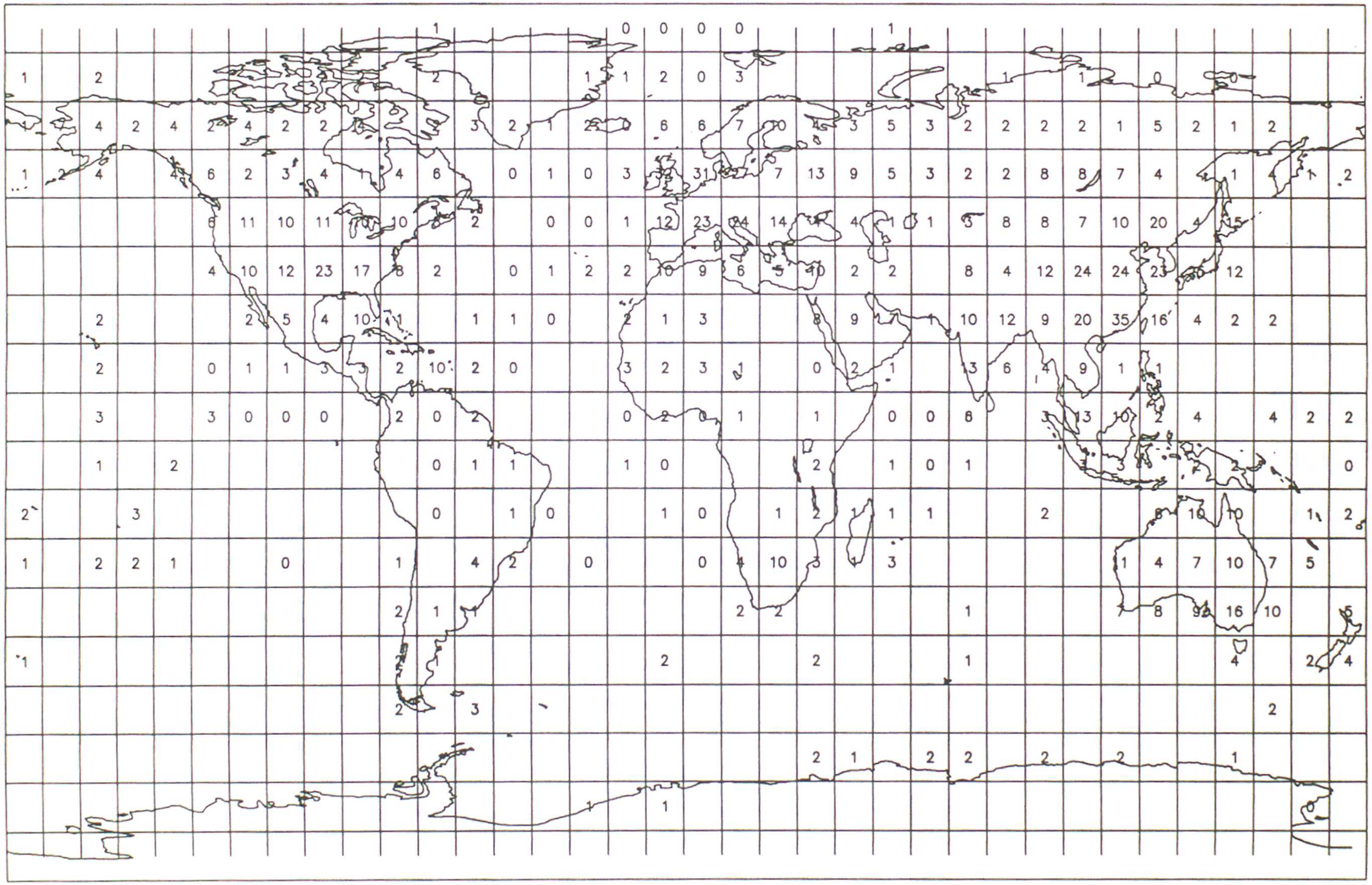
WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
17220	12	Z	30	38/ 27	17	5	179.0	190.2	261.2	10
17351	00	Z	100	37/ 35	13	0	83.9	-90.5	123.5	4
37985	00	Z	250	39/ 49	16	5	100.0	47.0	110.5	8
40841	00	Z	100	30/ 57	17	0	61.1	-111.4	127.0	4
41780	00	Z	100	25/ 67	15	1	141.7	101.5	174.3	4
42027	00	Z	150	34/ 75	19	2	82.3	-98.3	128.2	10
42027	12	Z	100	34/ 75	16	2	120.9	-41.4	127.8	5
42314	00	Z	250	27/ 95	15	0	58.9	-61.3	85.0	6
42314	12	Z	200	27/ 95	19	0	53.9	-83.3	99.2	7
42361	00	Z	100	26/ 78	14	2	121.6	-28.2	124.8	5
42361	12	Z	100	26/ 78	16	0	110.6	67.4	129.5	6
42369	00	Z	50	27/ 81	13	0	184.8	9.8	185.1	7
42369	12	Z	70	27/ 81	11	4	140.2	146.2	202.5	9
42492	00	Z	70	26/ 85	21	0	141.3	-41.0	147.2	8
42492	12	Z	100	26/ 85	24	0	118.7	-77.6	141.8	9
42647	00	Z	100	23/ 73	12	0	107.4	-68.8	127.6	7
42647	12	Z	100	23/ 73	12	0	86.8	98.0	130.9	4
42701	12	Z	50	23/ 85	11	0	130.4	117.5	175.5	4
42724	00	Z	50	24/ 91	14	0	148.8	117.9	189.9	10
42724	12	Z	150	24/ 91	17	0	93.2	-67.5	115.1	6
42867	00	Z	70	21/ 79	22	0	119.7	-54.4	131.5	6
42867	12	Z	30	21/ 79	9	1	176.7	152.3	233.3	9
42971	12	Z	100	20/ 86	21	0	98.3	-49.8	110.2	4
43003	12	Z	200	19/ 73	20	0	71.4	75.8	104.1	5
43014	12	Z	200	20/ 75	17	0	102.2	49.4	113.6	4
43128	00	Z	70	17/ 78	11	1	132.1	-54.6	143.0	4
43128	12	Z	100	17/ 78	17	0	128.8	6.4	129.0	9
43185	00	Z	50	16/ 81	17	0	141.2	25.7	143.5	4
43185	12	Z	70	16/ 81	14	0	132.4	90.6	160.5	8
43192	00	Z	150	15/ 74	17	0	89.3	-52.7	103.7	7
43279	12	Z	70	13/ 80	17	0	91.4	169.4	192.5	7
43285	00	Z	100	13/ 75	22	2	100.6	-83.0	130.4	5
43285	12	Z	30	13/ 75	10	0	116.7	143.2	184.7	5
43295	12	Z	100	13/ 78	18	1	100.9	121.6	158.0	5
43311	12	Z	200	11/ 73	14	1	109.6	11.4	110.2	4
43346	00	Z	50	11/ 80	22	0	91.2	-135.2	163.1	8
43353	00	Z	100	10/ 76	15	0	69.0	-126.1	143.7	5
43369	12	Z	70	8/ 73	14	0	94.3	93.4	132.7	5
43371	00	Z	50	8/ 77	17	3	92.0	-256.8	272.8	6
50953	00	Z	70	46/ 127	29	0	39.1	116.0	122.4	6
52836	12	Z	100	36/ 98	26	0	76.9	119.1	141.8	5
54135	00	Z	70	44/ 122	26	0	79.0	117.8	141.8	6
54161	00	Z	70	44/ 125	26	0	73.5	123.3	143.6	6
54497	00	Z	70	40/ 124	17	0	113.7	144.8	184.1	6
57957	12	Z	100	25/ 110	27	0	43.0	125.9	133.1	4
61996	12	Z	400	-38/ 78	28	1	61.3	19.8	64.4	4
61998	12	Z	500	-49/ 70	27	0	37.4	32.0	49.3	4
62337	12	Z	100	31/ 34	17	1	102.3	90.6	136.7	4
62414	12	Z	70	24/ 33	12	2	114.1	212.2	241.0	5
63450	12	Z	700	9/ 39	26	0	8.9	52.4	53.1	5
76151	00	Z	1000	29/-118	19	1	33.2	42.5	53.9	4
83612	12	Z	100	-20/ -55	27	0	58.8	104.1	119.6	5
85934	00	Z	400	-53/ -71	28	0	48.7	54.8	73.3	5
89022	12	Z	300	-75/ -27	15	13	89.7	-60.1	108.0	9
89542	00	Z	150	-68/ 46	28	1	63.1	134.7	148.7	7
89542	12	Z	250	-68/ 46	11	1	62.0	111.6	127.7	10
89592	12	Z	500	-67/ 93	28	0	50.3	7.3	50.8	4
96237	00	Z	200	-2/ 106	11	0	71.4	-70.1	100.1	8

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – AUGUST 1997 FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1359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1 2 2 1 1 2 0 3 1 1 0 0
4 2 4 2 4 2 2 3 2 1 2 6 6 7 0 3 5 3 2 2 2 2 1 5 2 1 2
1 2 4 4 6 2 3 4 1 4 6 0 1 0 3 3 31 7 13 9 5 3 2 2 8 8 7 4 1 1 2
6 11 10 11 0 10 2 0 0 1 12 23 24 14 4 1 1 3 8 8 7 10 20 4 5
4 10 12 23 17 8 2 0 1 2 2 10 9 6 5 10 2 2 8 4 12 24 24 23 30 12
2 2 5 4 10 1 1 1 0 2 1 3 8 9 1 10 12 9 20 35 16 4 2 2
2 0 1 1 3 3 2 10 2 0 3 2 3 1 0 2 1 13 6 4 9 1 1
3 3 0 0 0 2 0 2 0 2 0 1 1 0 0 8 3 13 10 2 4 4 2 2
1 2 0 1 1 1 0 2 1 0 1 3 3 2 0
2 3 0 1 0 1 0 1 2 1 1 1 2 8 10 10 1 2
1 2 2 1 0 1 4 2 0 0 4 10 3 1 3 1 4 7 10 7 5
2 1 1 2 2 1 7 8 92 16 10 5
1 1 2 2 1 4 2 4
2 3 2
2 1 2 2 2 2 1
1 1 0

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
83612	00	V	200	-20/ -55	26	0	19	3.7	3.1	15.7	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – AUGUST 1997

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1215

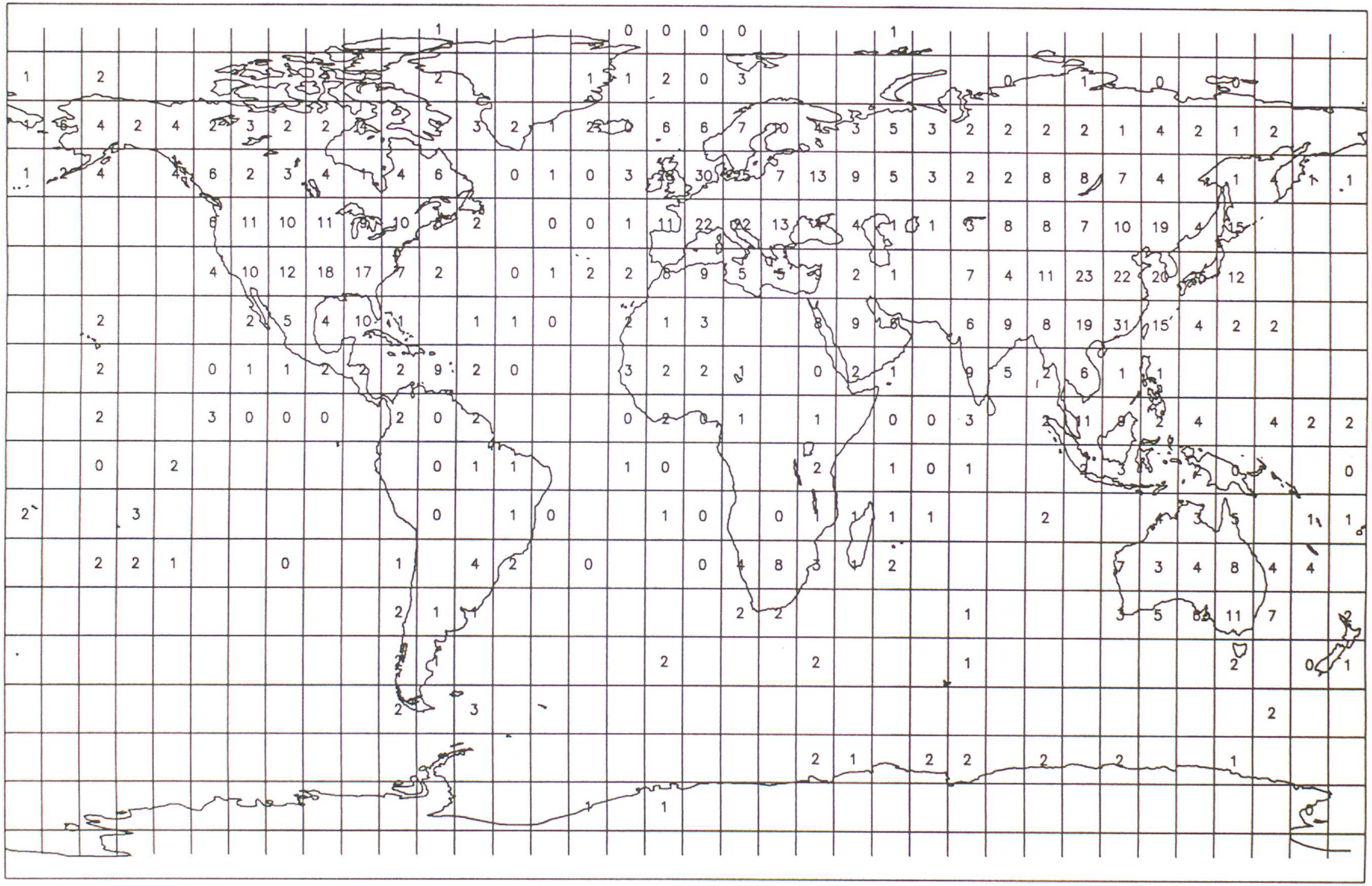

1 0 0 0 0 1
1 2 2 1 1 2 0 3 0 1 0 0
6 4 2 4 2 3 2 2 4 3 2 1 2 0 6 6 7 0 4 3 5 3 2 2 2 2 1 4 2 1 2
1 2 4 4 6 2 3 4 1 4 6 0 1 0 3 28 30 25 7 13 9 5 3 2 2 8 8 7 4 1 4 1 1
8 11 10 11 9 10 2 2 0 0 1 11 22 22 13 4 4 1 1 3 8 8 7 10 19 4 15
4 10 12 18 17 7 2 0 1 2 2 6 9 5 5 2 1 7 4 11 23 22 20 12
2 2 5 4 10 1 1 1 0 2 1 3 8 9 6 6 9 8 19 31 15 4 2 2
2 0 1 1 2 2 2 9 2 0 3 2 2 1 0 2 1 9 5 2 6 1 1
2 3 0 0 0 2 0 2 0 2 0 1 1 0 0 3 2 11 9 2 4 4 2 2
0 2 0 1 1 1 0 2 1 0 1 3 0 0
2 3 0 1 0 1 0 0 1 1 1 1 2 4 3 5 1 1
2 2 1 0 1 4 2 0 0 4 8 3 1 2 7 3 4 8 4 4
2 1 1 2 2 1 3 5 62 11 7 2
1 2 2 1 2 0 1
2 3 2
2 1 2 2 2 2 1
1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
JBOA	00	DD	30/ 140	8	10.6	9.8	18.6
17280	00	DD	38/ 40	26	-10.4	3.6	15.9
25399	00	DD	66/-170	17	12.1	7.0	20.6
58362	00	DD	31/ 121	24	-10.9	4.7	22.0
60490	12	DD	36/ -1	6	-11.6	5.6	10.2
62337	00	DD	31/ 34	8	-29.4	4.1	12.8
62337	12	DD	31/ 34	16	-22.6	5.0	15.2
63450	12	DD	9/ 39	21	-15.8	8.2	24.4
65578	00	DD	5/ -4	8	-12.6	7.6	19.1
72248	12	DD	32/ -94	21	-10.8	5.1	12.4
76458	00	DD	23/-106	17	-14.0	9.4	24.1
85799	12	DD	-41/ -73	29	-10.9	9.4	19.3
91348	00	DD	7/ 158	20	11.3	9.1	29.3
91366	12	DD	9/ 168	20	19.9	7.2	27.3
96163	00	DD	-1/ 100	14	27.4	3.6	16.4
96315	00	DD	5/ 115	23	10.4	4.5	16.4

MONITORING OF SATELLITE WINDS

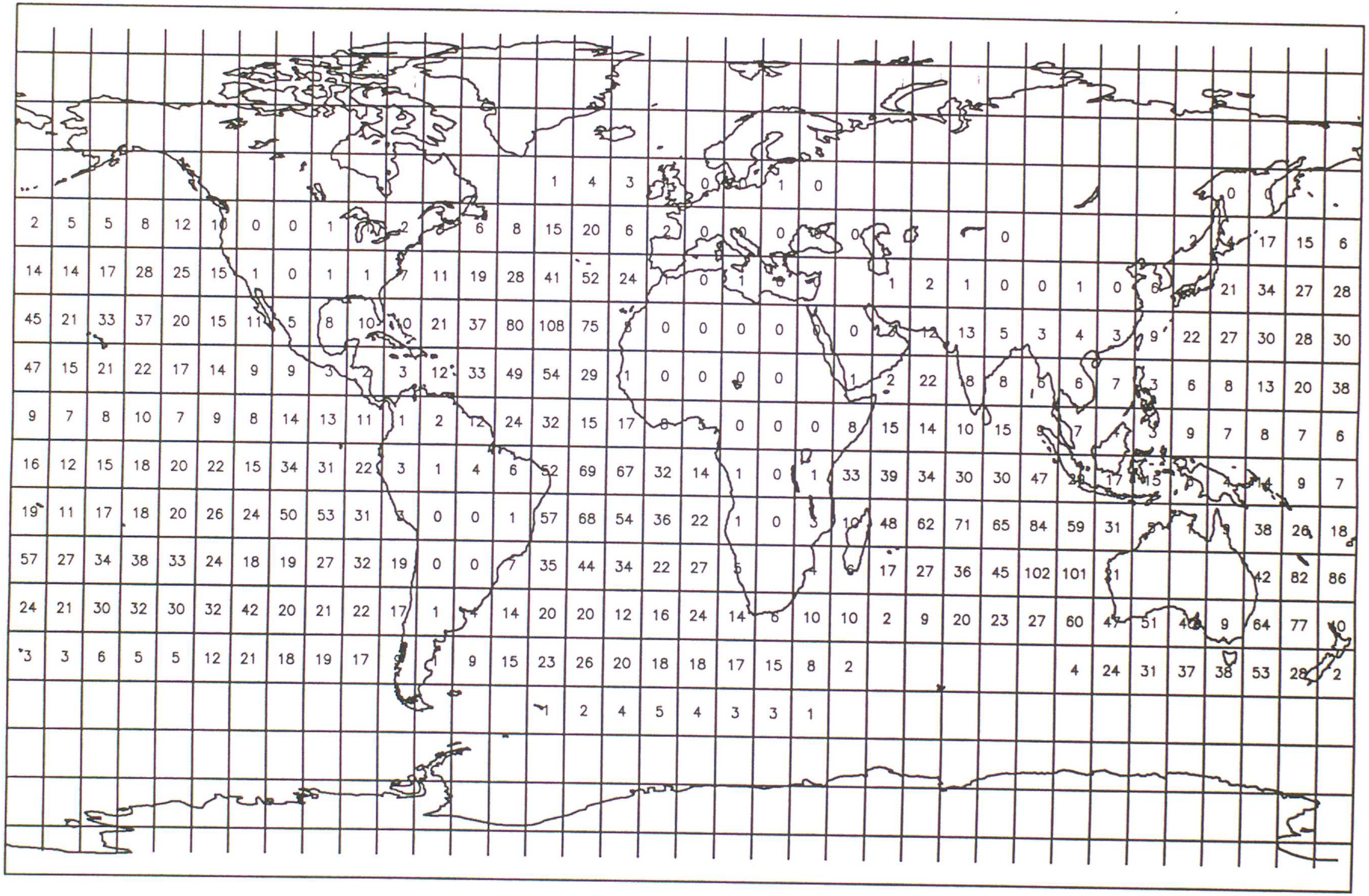
MONITORING CENTRE: BRACKNELL

MONTH: August, 1997

Monitoring procedures

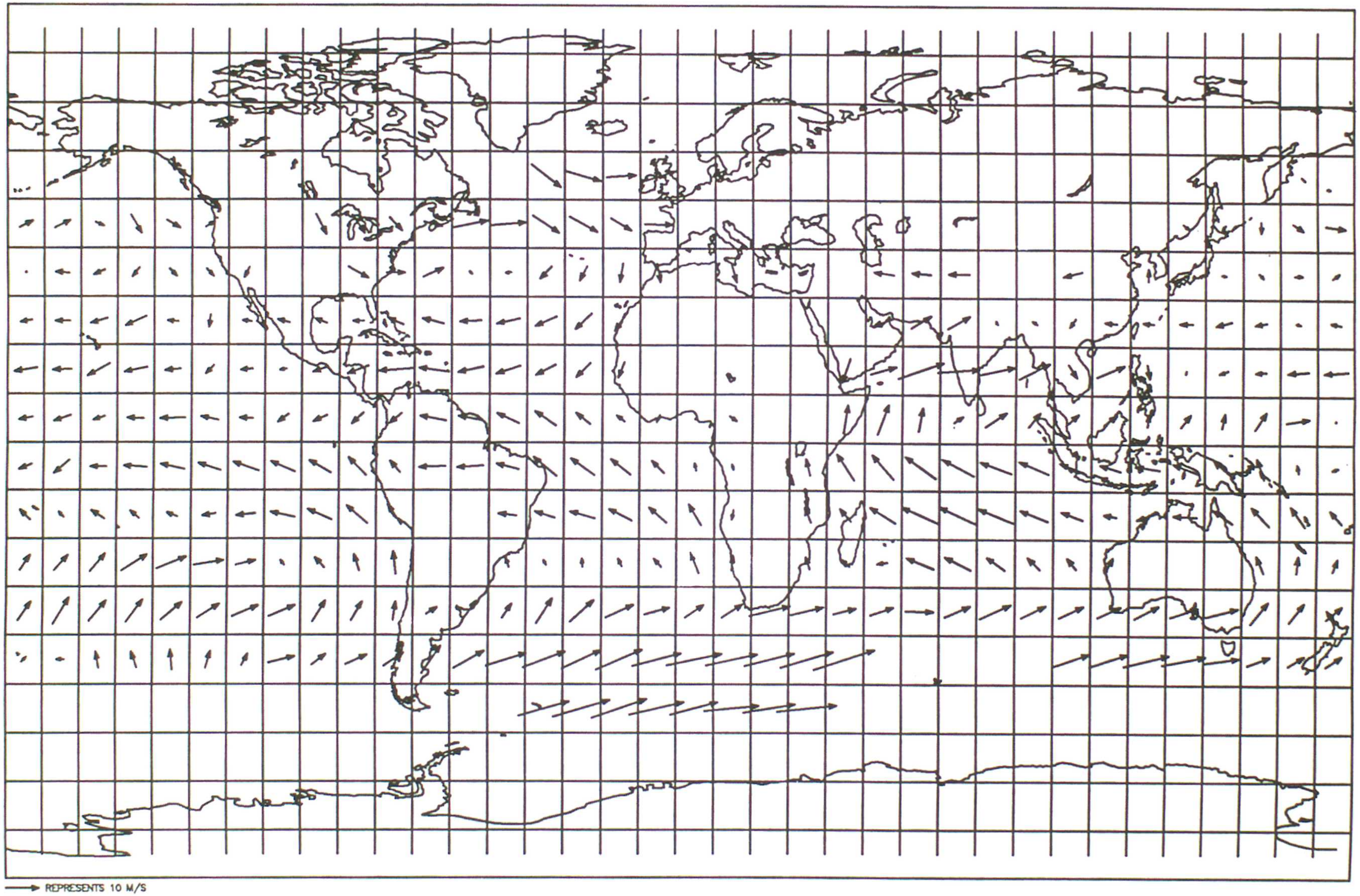
Period	:One calendar month.
Data monitored	:Reports from GOES, METEOSAT, GMS, INSAT.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
AUGUST 1997


1 4 3 0 0 1 0 0 0
2 5 5 8 12 10 0 0 1 2 6 8 15 20 6 2 0 0 0 0 0 0 2 4 17 15 6
14 14 17 28 25 15 1 0 1 1 7 11 19 28 41 52 24 1 0 1 0 0 1 2 1 0 0 1 0 6 21 34 27 28
45 21 33 37 20 15 11 5 8 10 10 21 37 80 108 75 8 0 0 0 0 0 0 3 12 13 5 3 4 3 9 22 27 30 28 30
47 15 21 22 17 14 9 9 3 2 3 12 33 49 54 29 1 0 0 0 0 1 2 22 18 8 6 6 7 3 6 8 13 20 38
9 7 8 10 7 9 8 14 13 11 1 2 12 24 32 15 17 8 3 0 0 0 8 15 14 10 15 9 7 4 3 9 7 8 7 6
16 12 15 18 20 22 15 34 31 22 3 1 4 6 52 69 67 32 14 1 0 1 33 39 34 30 30 47 28 17 15 6 4 14 9 7
19 11 17 18 20 26 24 50 53 31 3 0 0 1 57 68 54 36 22 1 0 3 10 48 62 71 65 84 59 31 5 1 9 38 26 18
57 27 34 38 33 24 18 19 27 32 19 0 0 7 35 44 34 22 27 5 4 6 17 27 36 45 102 101 31 42 82 86
24 21 30 32 30 32 42 20 21 22 17 1 4 14 20 20 12 16 24 14 6 10 10 2 9 20 23 27 60 47 51 40 9 64 77 10
3 3 6 5 5 12 21 18 19 17 9 1 9 15 23 26 20 18 18 17 15 8 2 4 24 31 37 38 53 28 2
1 2 4 5 4 3 3 1

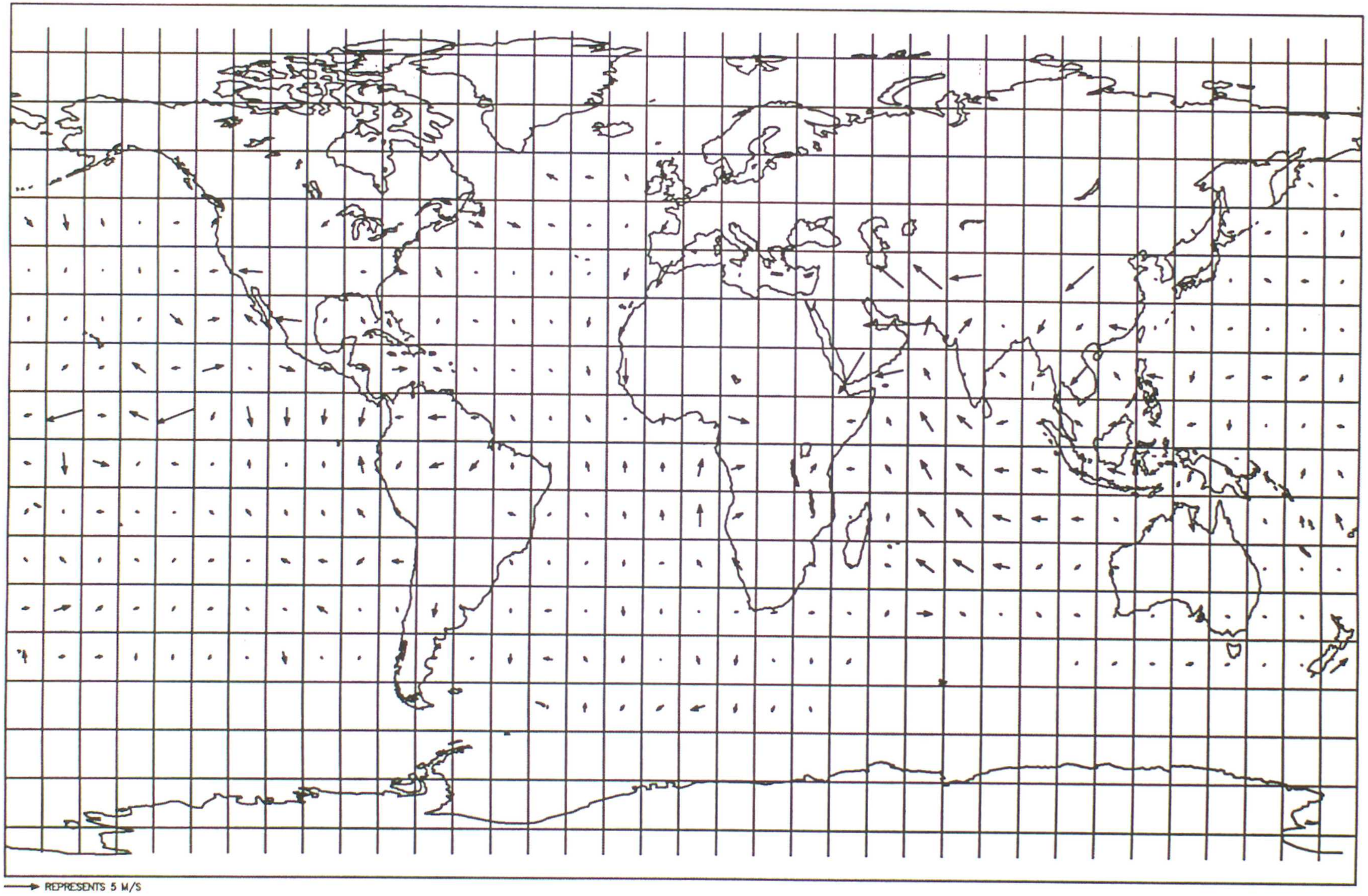
SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA
AUGUST 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11

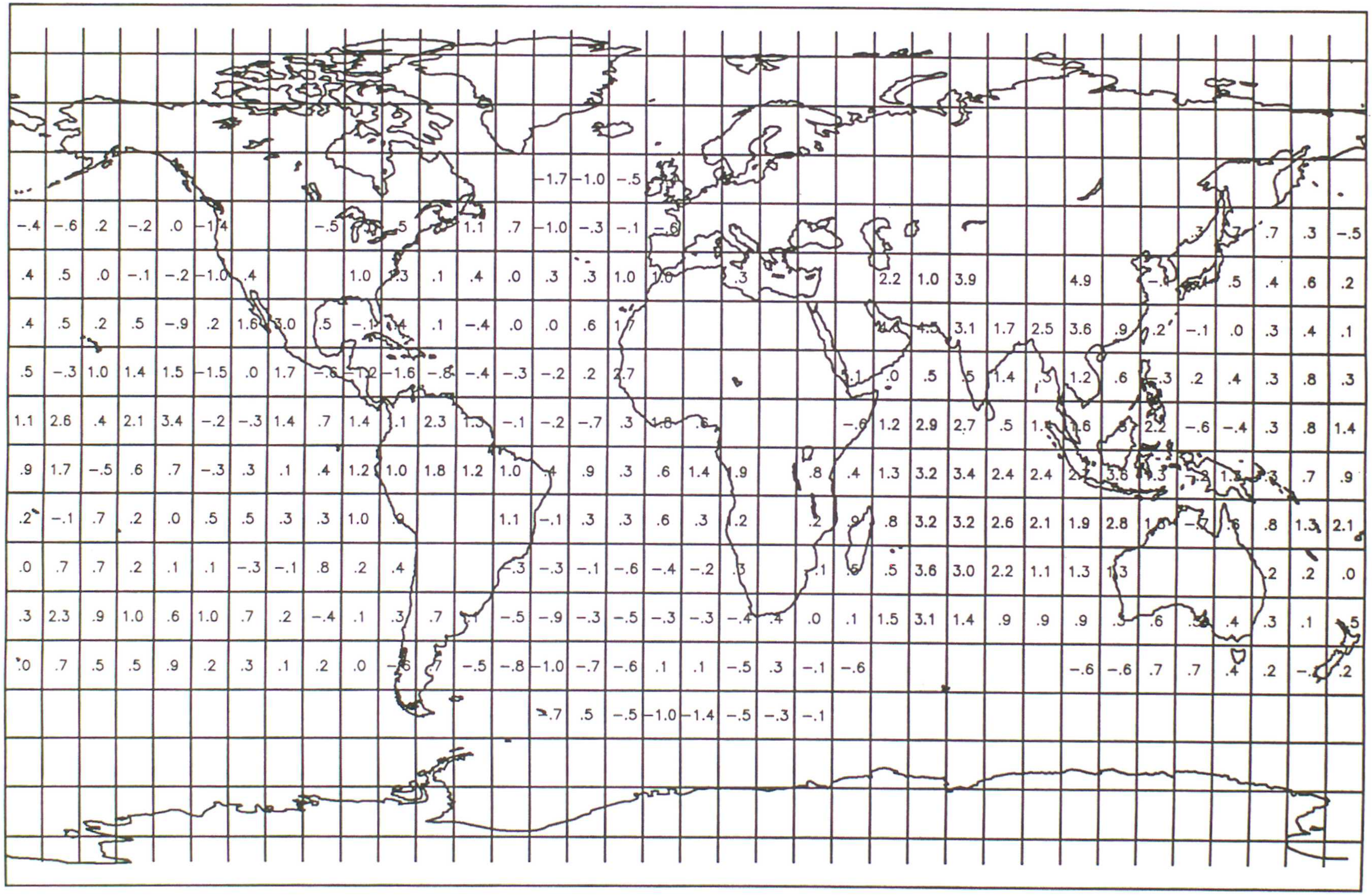

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA
AUGUST 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

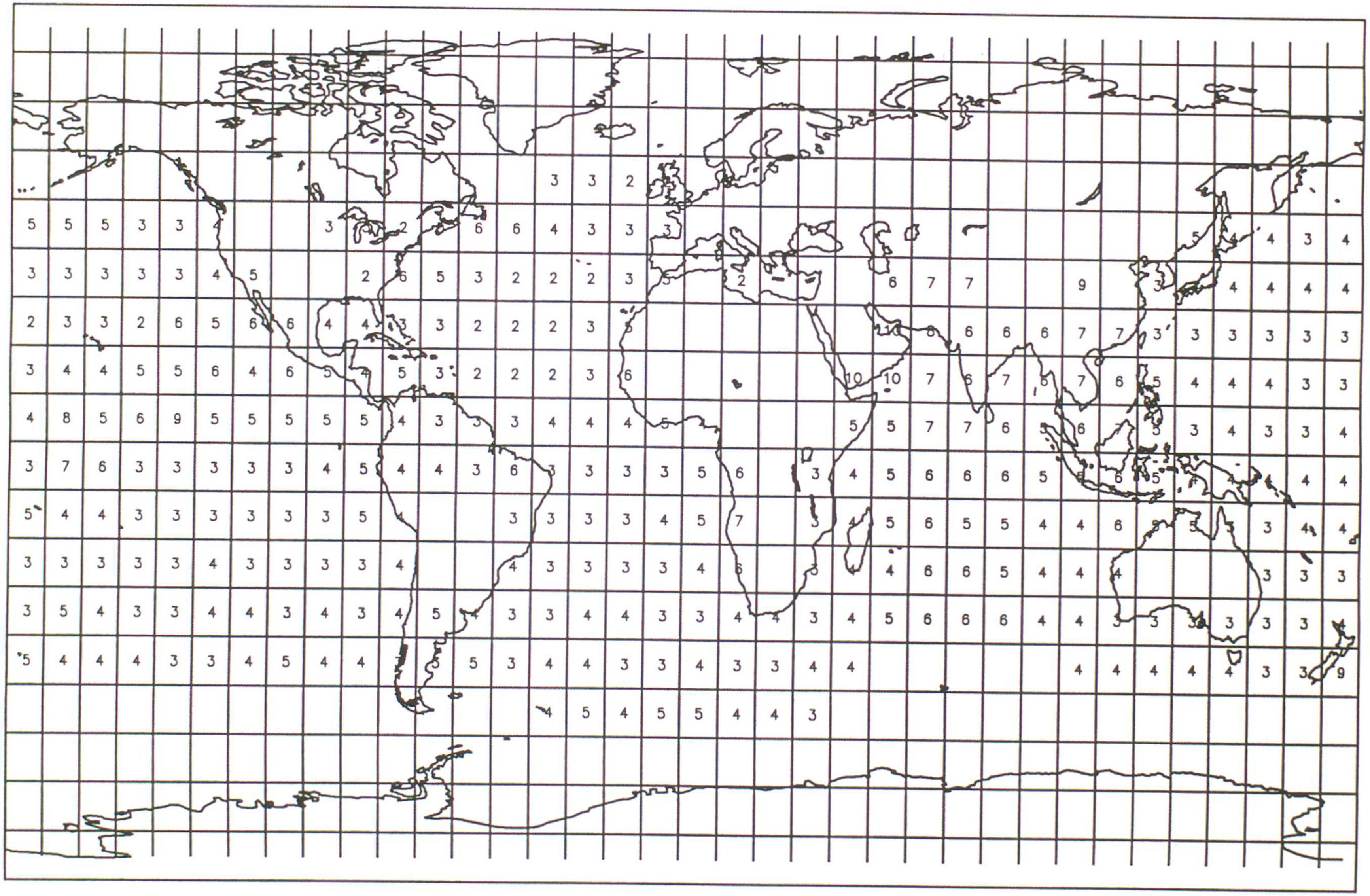
FIGURE 12



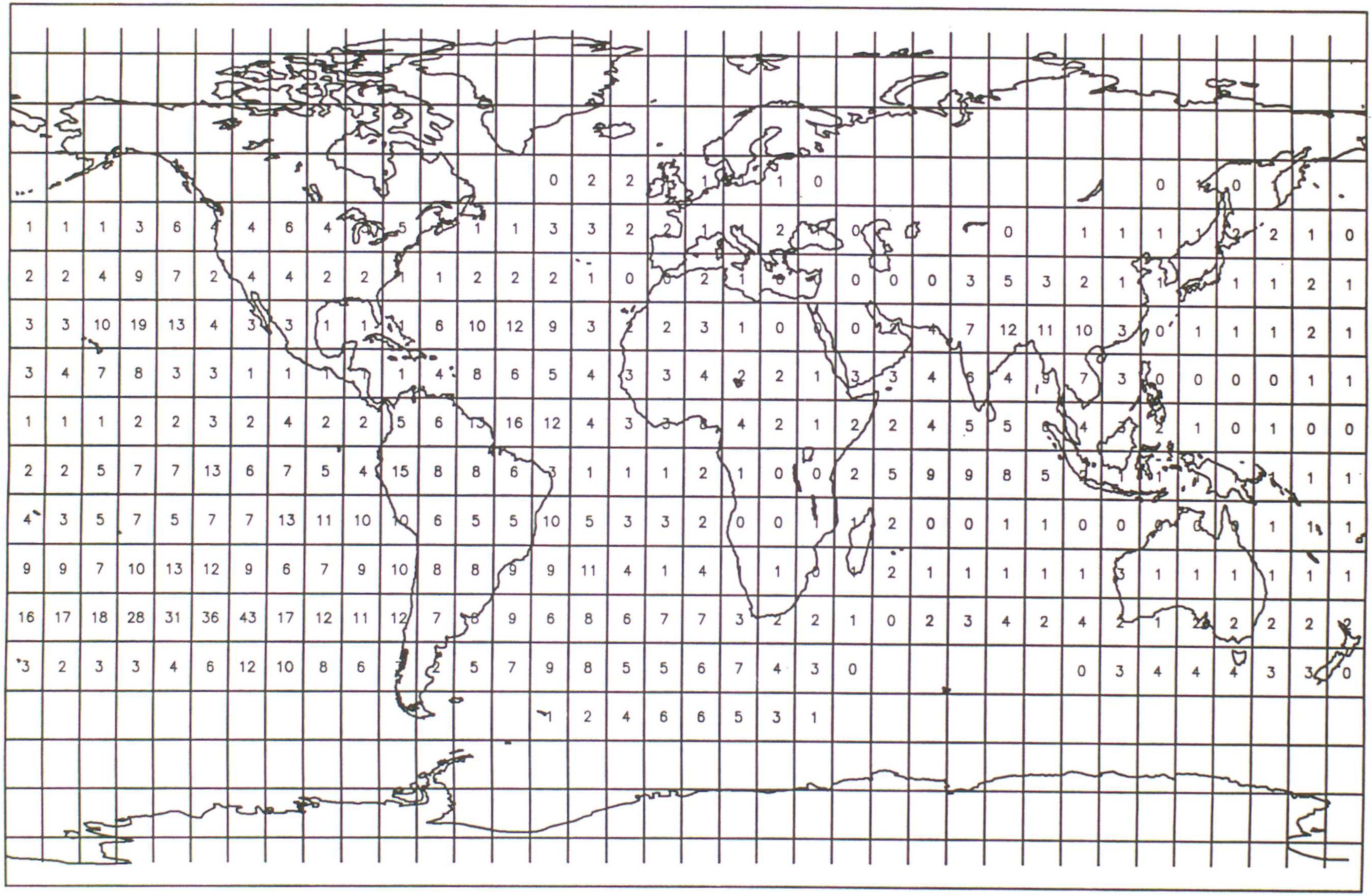
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
AUGUST 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.7 -1.0 -.5
-.4 -.6 .2 -.2 .0 -1.4 -.5 .5 1.1 .7 -1.0 -.3 -.1 -.6 .3 .7 .7 .3 -.5
.4 .5 .0 -.1 -.2 -1.0 .4 1.0 .3 .1 .4 .0 .3 .3 1.0 1.0 .3 2.2 1.0 3.9 4.9 -.1 .5 .4 .6 .2
.4 .5 .2 .5 -.9 .2 1.6 3.0 .5 -.1 .4 .1 -.4 .0 .0 .6 1.7 4.6 4.5 3.1 1.7 2.5 3.6 .9 .2 -.1 .0 .3 .4 .1
.5 -.3 1.0 1.4 1.5 -1.5 .0 1.7 -.6 -1.2 -1.6 -.8 -.4 -.3 -.2 .2 2.7 .1 .0 .5 .5 1.4 .3 1.2 .6 -.3 .2 .4 .3 .8 .3
1.1 2.6 .4 2.1 3.4 -.2 -.3 1.4 .7 1.4 .1 2.3 1.3 -.1 -.2 -.7 .3 1.8 .6 -.6 1.2 2.9 2.7 .5 1.4 1.6 .8 2.2 -.6 -.4 .3 .8 1.4
.9 1.7 -.5 .6 .7 -.3 .3 .1 .4 1.2 1.0 1.8 1.2 1.0 .4 .9 .3 .6 1.4 1.9 .8 .4 1.3 3.2 3.4 2.4 2.4 2.7 3.6 1.3 .2 1.3 .3 .7 .9
.2 -.1 .7 .2 .0 .5 .5 .3 .3 1.0 .9 1.1 -.1 .3 .3 .6 .3 1.2 .2 .9 .8 3.2 3.2 2.6 2.1 1.9 2.8 1.6 -.7 .6 .8 1.3 2.1
.0 .7 .7 .2 .1 .1 -.3 -.1 .8 .2 .4 -.3 -.3 -.1 -.6 -.4 -.2 .3 .1 .5 .5 3.6 3.0 2.2 1.1 1.3 1.3 .2 .2 .0
.3 2.3 .9 1.0 .6 1.0 .7 .2 -.4 .1 .3 .7 .1 -.5 -.9 -.3 -.5 -.3 -.3 -.4 .4 .0 .1 1.5 3.1 1.4 .9 .9 .9 .5 .6 .5 .4 .3 .1 .5
.0 .7 .5 .5 .9 .2 .3 .1 .2 .0 -.6 .7 -.5 -.8 -1.0 -.7 -.6 .1 .1 -.5 .3 -.1 -.6 -.6 -.6 .7 .7 .4 .2 -.1 .2
.7 .5 -.5 -1.0 -1.4 -.5 -.3 -.1

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
AUGUST 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

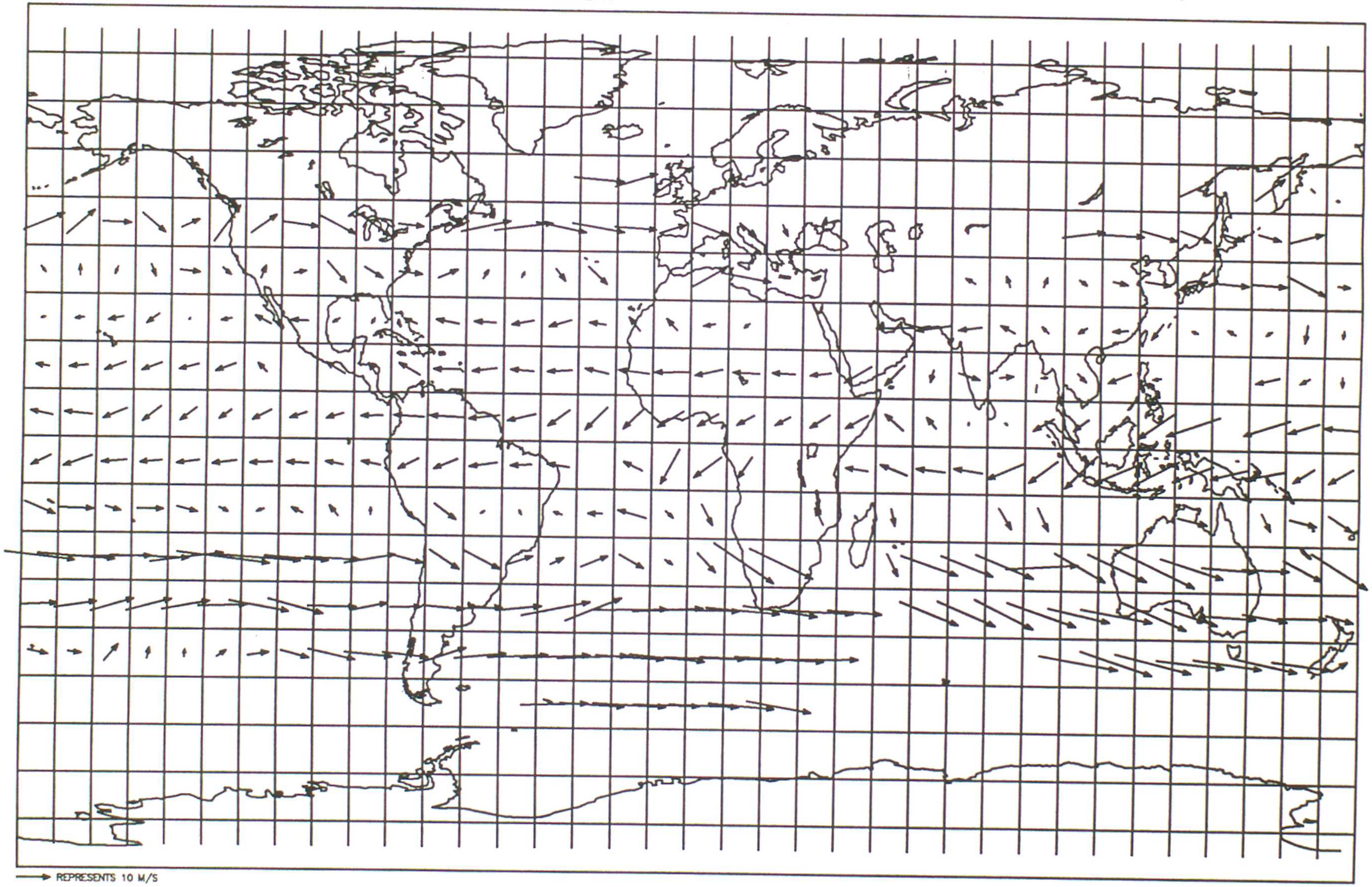

3 3 2
5 5 5 3 3 3 2 6 6 4 3 3 3 5 4 4 3 4
3 3 3 3 3 4 5 2 6 5 3 2 2 2 3 5 2 6 7 7 9 3 4 4 4 4
2 3 3 2 6 5 6 6 4 4 3 3 2 2 2 3 5 10 8 6 6 6 7 7 3 3 3 3 3 3
3 4 4 5 5 6 4 6 5 4 5 3 2 2 2 3 6 10 10 7 6 7 6 7 6 5 4 4 4 3 3
4 8 5 6 9 5 5 5 5 5 4 3 3 3 4 4 4 5 5 5 7 7 6 5 6 7 5 3 4 3 3 4
3 7 6 3 3 3 3 3 4 5 4 4 3 6 3 3 3 3 5 6 3 4 5 6 6 6 5 6 5 5 4 4
5 4 4 3 3 3 3 3 3 5 4 3 3 3 3 4 5 7 3 4 5 6 5 5 4 4 6 5 5 3 3 4 4
3 3 3 3 3 4 3 3 3 3 4 4 3 3 3 3 4 6 3 4 4 6 6 5 4 4 4 3 3 3
3 5 4 3 3 4 4 3 4 3 4 5 4 3 3 4 4 3 3 4 4 3 4 5 6 6 6 4 4 3 3 3 3 3 3 4
5 4 4 4 3 3 4 5 4 4 3 5 5 3 4 4 3 3 4 3 3 4 4 4 4 4 4 4 3 3 9
4 5 4 5 5 4 4 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
AUGUST 1997


0 2 2 1 1 1 0 0 0
1 1 1 3 6 4 4 6 4 5 1 1 3 3 2 2 1 1 2 1 0 0 1 1 1 1 2 1 0
2 2 4 9 7 2 4 4 2 2 1 1 2 2 2 1 0 0 2 1 0 0 0 0 0 3 5 3 2 1 1 1 1 2 1
3 3 10 19 13 4 3 3 1 1 1 6 10 12 9 3 2 2 3 1 0 0 0 2 4 7 12 11 10 3 0 1 1 1 2 1
3 4 7 8 3 3 1 1 1 1 1 4 8 6 5 4 3 3 4 2 2 1 3 3 4 6 4 9 7 3 0 0 0 0 1 1
1 1 1 2 2 3 2 4 2 2 5 6 13 16 12 4 3 3 3 4 2 1 2 2 4 5 5 5 4 3 2 1 0 1 0 0
2 2 5 7 7 13 6 7 5 4 15 8 8 6 3 1 1 1 2 1 0 0 2 5 9 9 8 5 1 1 1 1 1
4 3 5 7 5 7 7 13 11 10 10 6 5 5 10 5 3 3 2 0 0 1 1 2 0 0 1 1 0 0 0 0 0 1 1 1
9 9 7 10 13 12 9 6 7 9 10 8 8 9 9 11 4 1 4 1 0 1 2 1 1 1 1 1 3 1 1 1 1 1 1
16 17 18 28 31 36 43 17 12 11 12 7 8 9 6 8 6 7 7 3 2 2 1 0 2 3 4 2 4 2 1 2 2 2 2 2
3 2 3 3 4 6 12 10 8 6 3 2 5 7 9 8 5 5 6 7 4 3 0 0 3 4 4 4 3 3 0
1 2 4 6 6 5 3 1

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
AUGUST 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

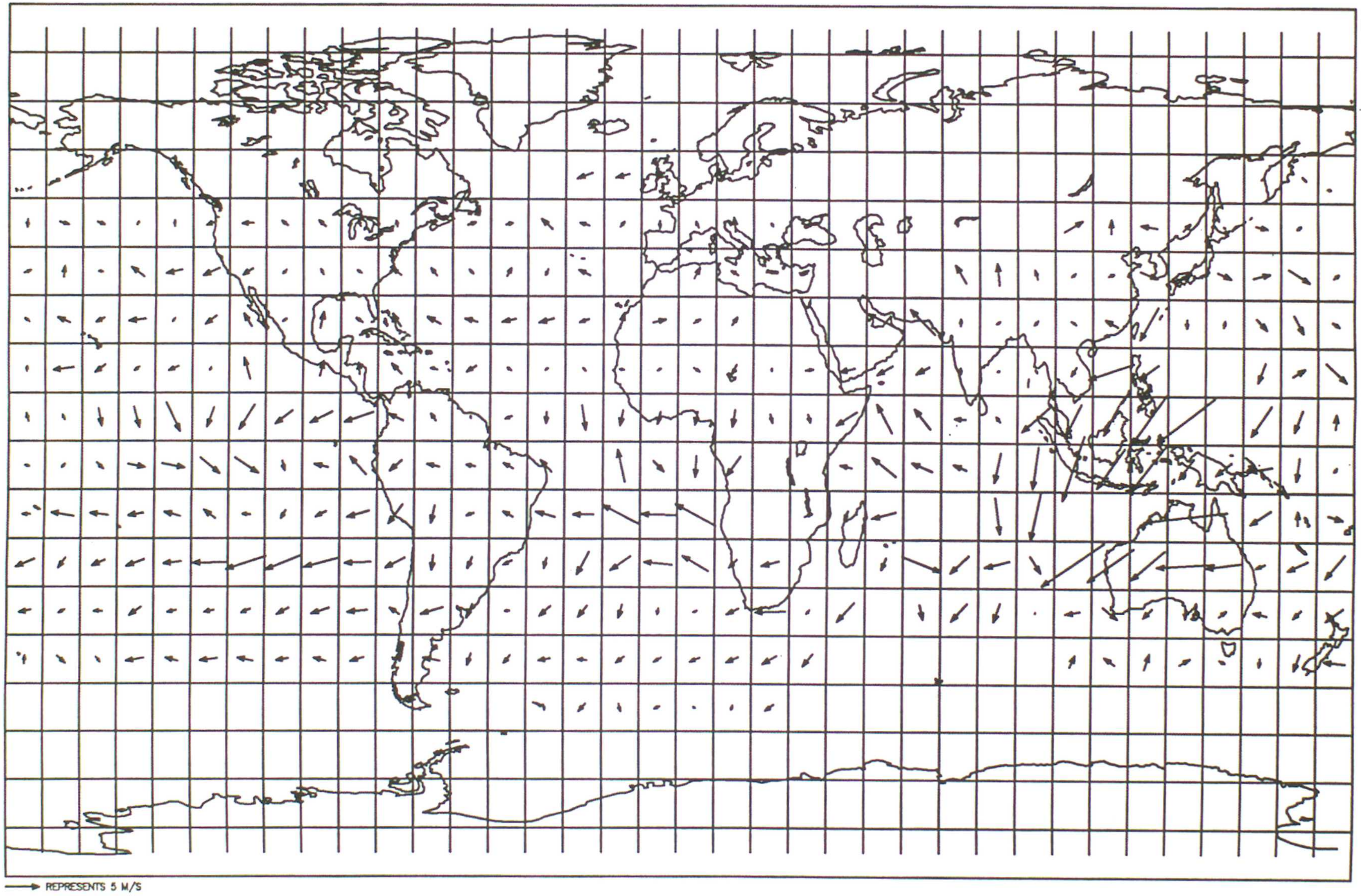
FIGURE 16


REPRESENTS 10 M/S

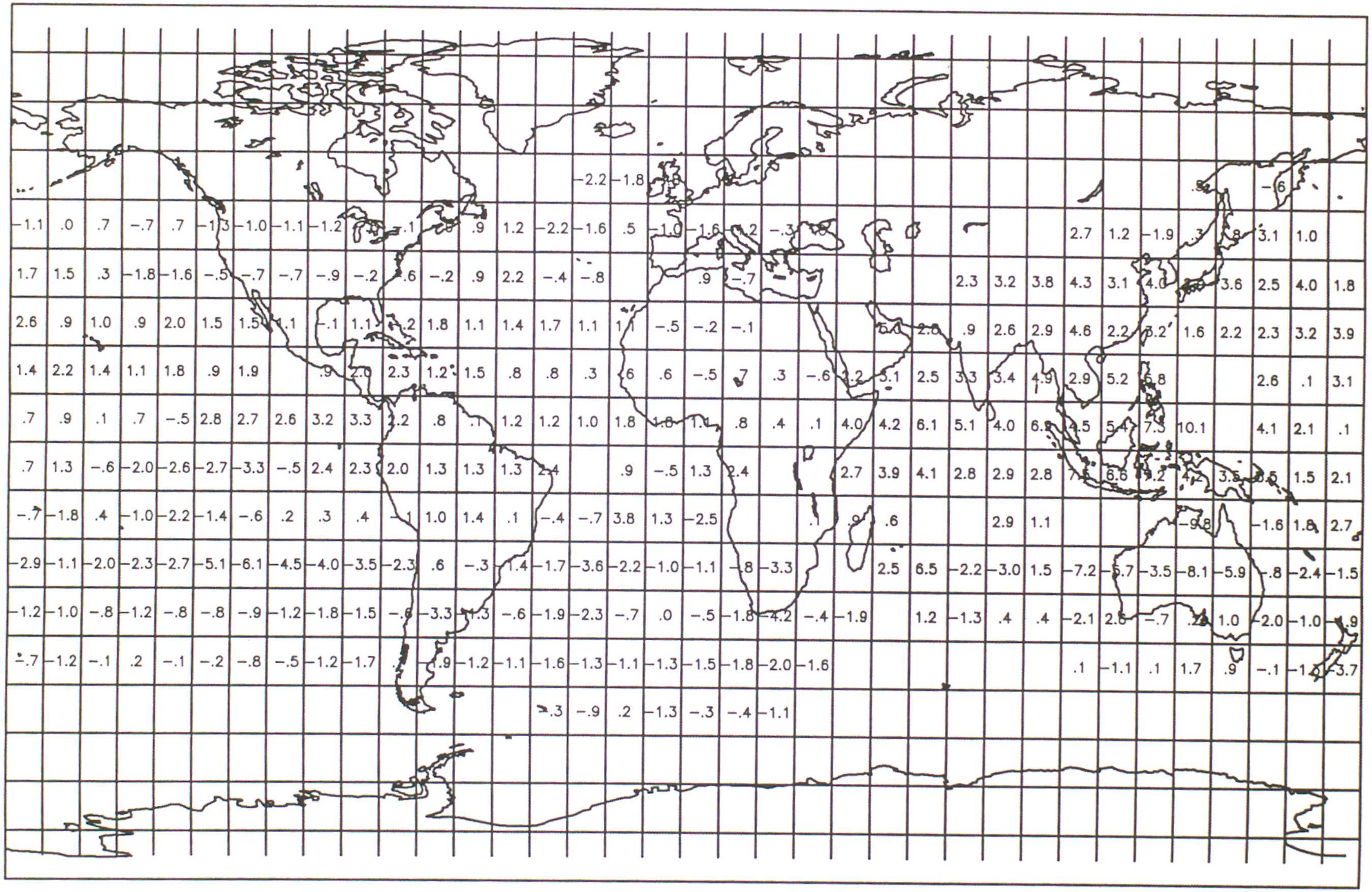
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA

FIGURE 17

AUGUST 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



SATOBS : MEAN O−B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
AUGUST 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

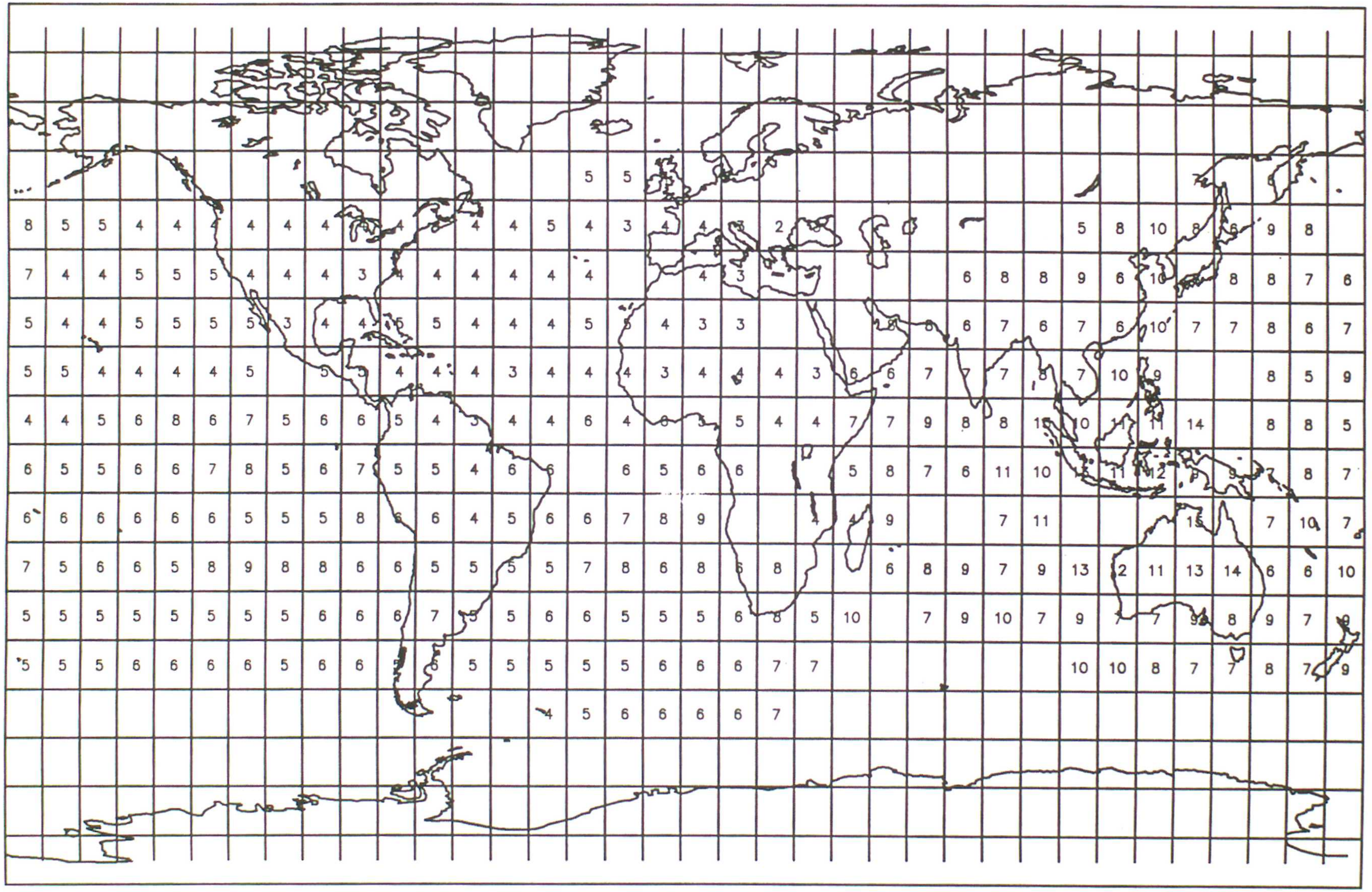

−2.2 −1.8 −.6
−1.1 .0 .7 −.7 .7 −1.3 −1.0 −1.1 −1.2 −.1 .9 1.2 −2.2 −1.6 .5 −1.0 −1.6 −1.2 −.3 2.7 1.2 −1.9 .3 .8 3.1 1.0
1.7 1.5 .3 −1.8 −1.6 −.5 −.7 −.7 −.9 −.2 .6 −.2 .9 2.2 −.4 −.8 .9 −.7 2.3 3.2 3.8 4.3 3.1 4.0 3.6 2.5 4.0 1.8
2.6 .9 1.0 .9 2.0 1.5 1.5 1.1 −.1 1.1 .2 1.8 1.1 1.4 1.7 1.1 1.1 −.5 −.2 −.1 5.0 2.6 .9 2.6 2.9 4.6 2.2 3.2 1.6 2.2 2.3 3.2 3.9
1.4 2.2 1.4 1.1 1.8 .9 1.9 .9 2.0 2.3 1.2 1.5 .8 .8 .3 .6 .6 −.5 .7 .3 −.6 1.2 3.1 2.5 3.3 3.4 4.9 2.9 5.2 3.8 2.6 .1 3.1
.7 .9 .1 .7 −.5 2.8 2.7 2.6 3.2 3.3 2.2 .8 .1 1.2 1.2 1.0 1.8 1.8 1.1 .8 .4 .1 4.0 4.2 6.1 5.1 4.0 6.9 4.5 5.4 7.3 10.1 4.1 2.1 .1
.7 1.3 −.6 −2.0 −2.6 −2.7 −3.3 −.5 2.4 2.3 2.0 1.3 1.3 1.3 2.4 .9 −.5 1.3 2.4 2.7 3.9 4.1 2.8 2.9 2.8 7.5 6.6 9.2 4.2 3.5 3.5 1.5 2.1
−.7 −1.8 .4 −1.0 −2.2 −1.4 −.6 .2 .3 .4 −.1 1.0 1.4 .1 −.4 −.7 3.8 1.3 −2.5 .1 .9 .6 2.9 1.1 −9.8 −1.6 1.8 2.7
−2.9 −1.1 −2.0 −2.3 −2.7 −5.1 −6.1 −4.5 −4.0 −3.5 −2.3 .6 −.3 1.4 −1.7 −3.6 −2.2 −1.0 −1.1 −.8 −3.3 2.5 6.5 −2.2 −3.0 1.5 −7.2 −5.7 −3.5 −8.1 −5.9 .8 −2.4 −1.5
−1.2 −1.0 −.8 −1.2 −.8 −.8 −.9 −1.2 −1.8 −1.5 −.6 −3.3 −1.3 −.6 −1.9 −2.3 −.7 .0 −.5 −1.8 −4.2 −.4 −1.9 1.2 −1.3 .4 .4 −2.1 2.6 −.7 .2 1.0 −2.0 −1.0 −.9
−.7 −1.2 −.1 .2 −.1 −.2 −.8 −.5 −1.2 −1.7 −.9 −1.2 −1.1 −1.6 −1.3 −1.1 −1.3 −1.5 −1.8 −2.0 −1.6 .1 −1.1 .1 1.7 .9 −.1 −1.2 −3.7
.3 −.9 .2 −1.3 −.3 −.4 −1.1

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19

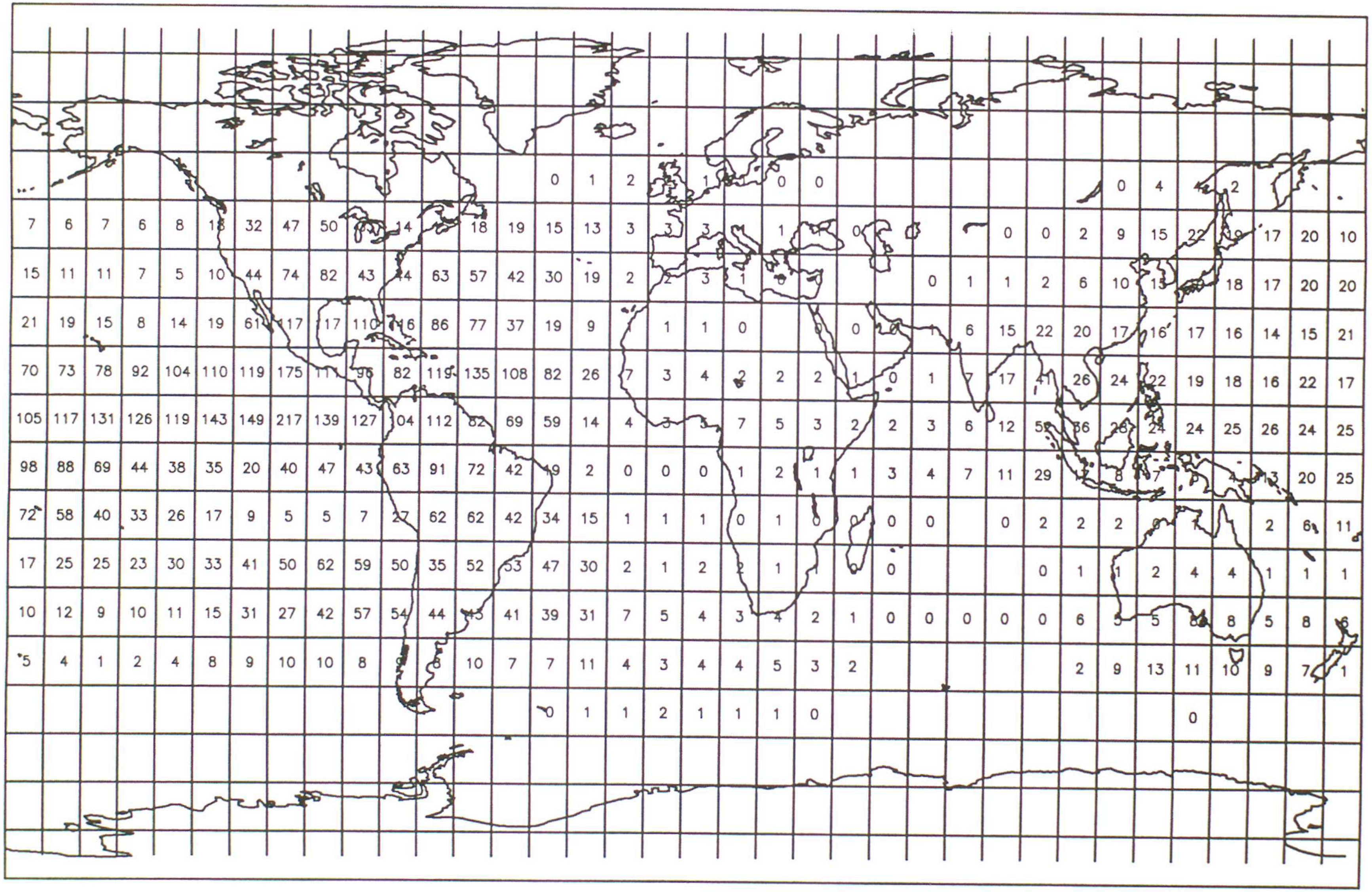
AUGUST 1997

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

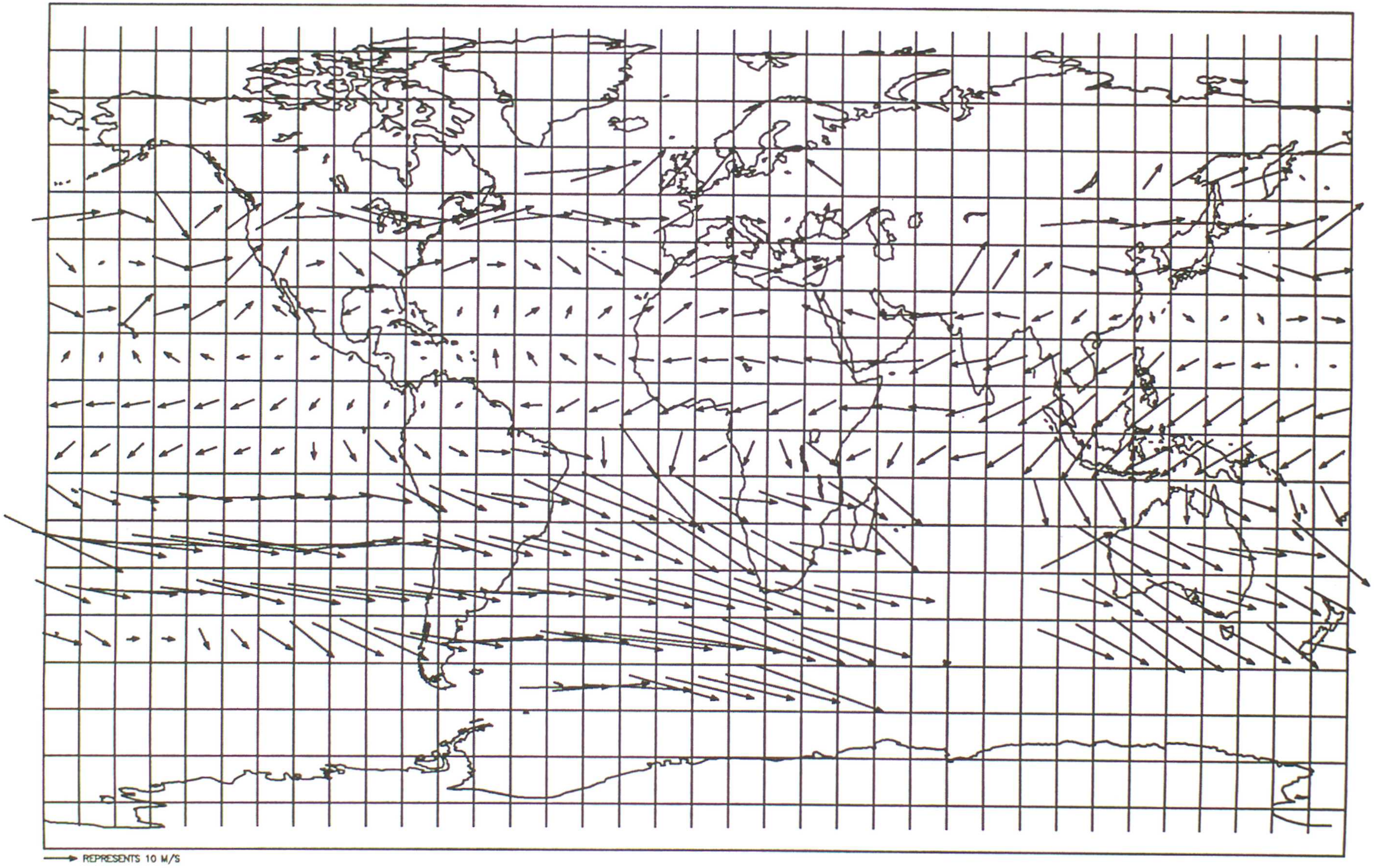

5 5
8 5 5 4 4 4 4 4 4 4 4 4 5 4 3 4 4 3 2 5 8 10 8 6 9 8
7 4 4 5 5 5 4 4 4 3 4 4 4 4 4 4 4 3 6 8 8 9 6 10 8 8 7 6
5 4 4 5 5 5 5 3 4 4 5 5 4 4 4 5 5 4 3 3 8 8 6 7 6 7 6 10 7 7 8 6 7
5 5 4 4 4 4 5 5 5 4 4 4 3 4 4 4 3 4 4 4 3 6 6 7 7 7 8 7 10 9 8 5 9
4 4 5 6 8 6 7 5 6 6 5 4 3 4 4 6 4 6 3 5 4 4 7 7 9 8 8 15 10 11 11 14 8 8 5
6 5 5 6 6 7 8 5 6 7 5 5 4 6 6 6 5 6 6 5 8 7 6 11 10 13 11 12 9 9 7 8 7
6 6 6 6 6 6 5 5 5 8 6 6 4 5 6 6 7 8 9 4 4 9 7 11 15 7 10 7
7 5 6 6 5 8 9 8 8 6 6 5 5 5 5 7 8 6 8 6 8 6 8 9 7 9 13 12 11 13 14 6 6 10
5 5 5 5 5 5 5 5 6 6 6 7 5 5 6 6 5 5 5 6 8 5 10 7 9 10 7 9 7 7 9 8 9 7 9
5 5 5 6 6 6 6 5 6 6 5 5 5 5 5 5 5 6 6 6 7 7 10 10 8 7 7 8 7 9
4 5 6 6 6 6 7

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
AUGUST 1997


0 1 2 1 0 0 0 4 4 2
7 6 7 6 8 18 32 47 50 14 18 19 15 13 3 3 3 1 1 0 0 0 2 9 15 22 19 17 20 10
15 11 11 7 5 10 44 74 82 43 44 63 57 42 30 19 2 2 3 1 0 0 0 1 1 2 6 10 15 18 17 20 20
21 19 15 8 14 19 61 117 117 110 116 86 77 37 19 9 1 1 1 0 0 0 0 1 6 15 22 20 17 16 17 16 14 15 21
70 73 78 92 104 110 119 175 111 96 82 119 135 108 82 26 7 3 4 2 2 2 1 0 1 7 17 41 26 24 22 19 18 16 22 17
105 117 131 126 119 143 149 217 139 127 104 112 82 69 59 14 4 3 3 7 5 3 2 2 3 6 12 58 36 28 24 24 25 26 24 25
98 88 69 44 38 35 20 40 47 43 63 91 72 42 49 2 0 0 0 1 2 1 1 3 4 7 11 29 17 8 7 4 13 20 25
72 58 40 33 26 17 9 5 5 7 27 62 62 42 34 15 1 1 1 0 1 0 0 0 0 0 2 2 2 0 1 2 6 11
17 25 25 23 30 33 41 50 62 59 50 35 52 53 47 30 2 1 2 2 1 1 0 0 0 1 1 2 4 4 1 1 1
10 12 9 10 11 15 31 27 42 57 54 44 43 41 39 31 7 5 4 3 4 2 1 0 0 0 0 0 6 5 5 6 8 5 8 6
5 4 1 2 4 8 9 10 10 8 9 8 10 7 7 11 4 3 4 4 5 3 2 2 9 13 11 10 9 7 1
0 1 1 2 1 1 1 0 0

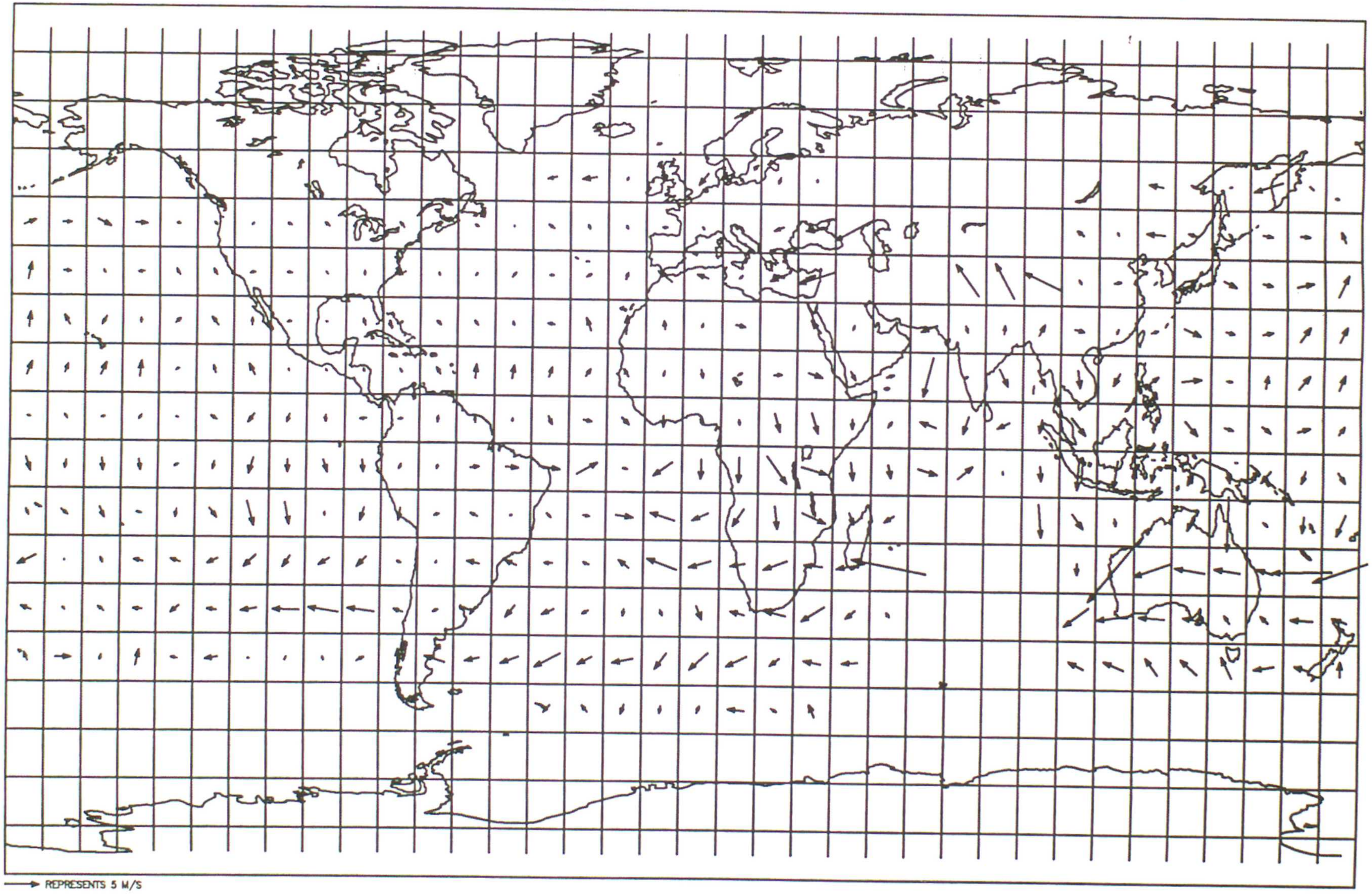
SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA
AUGUST 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21

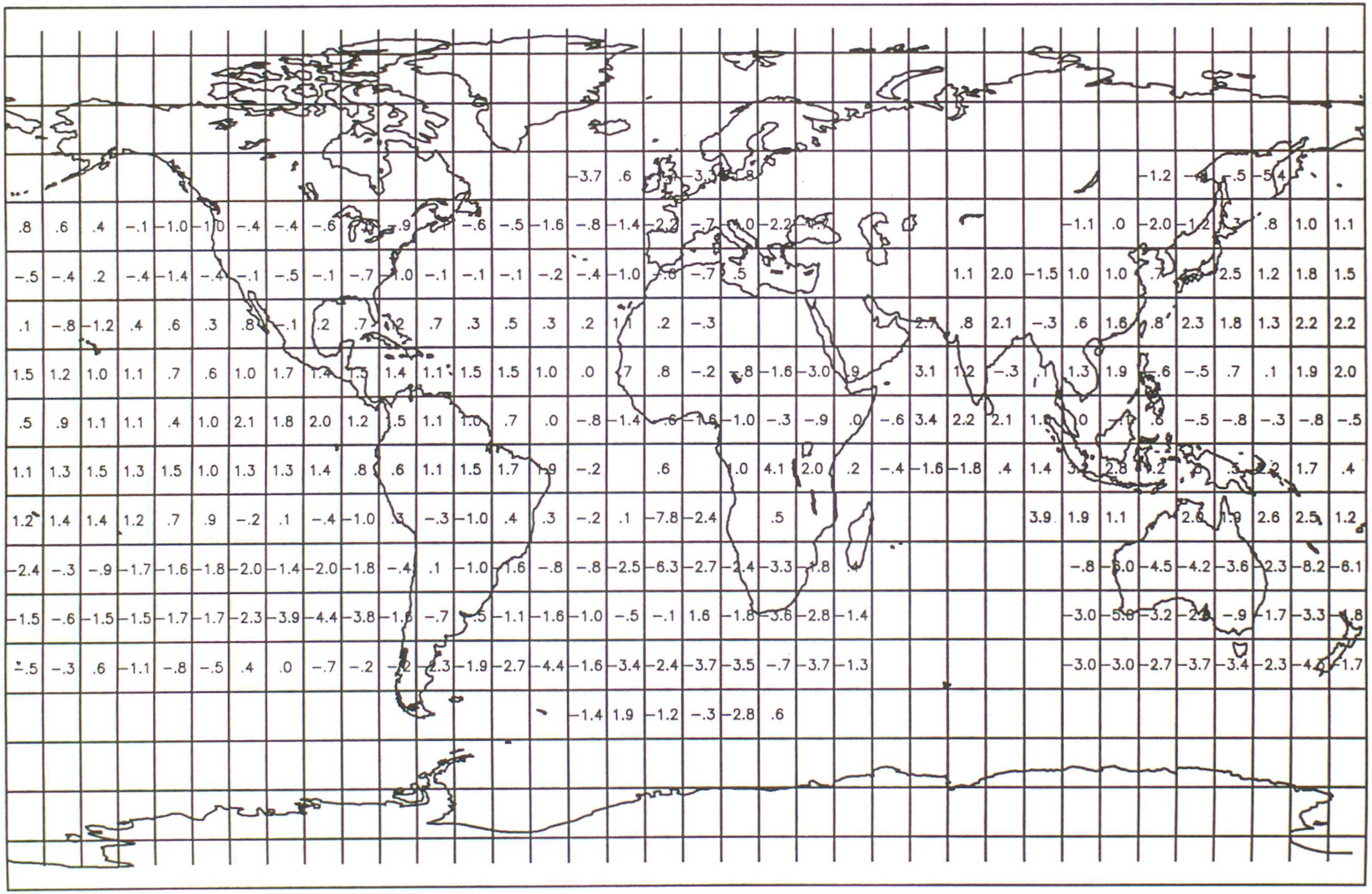

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA
AUGUST 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 22

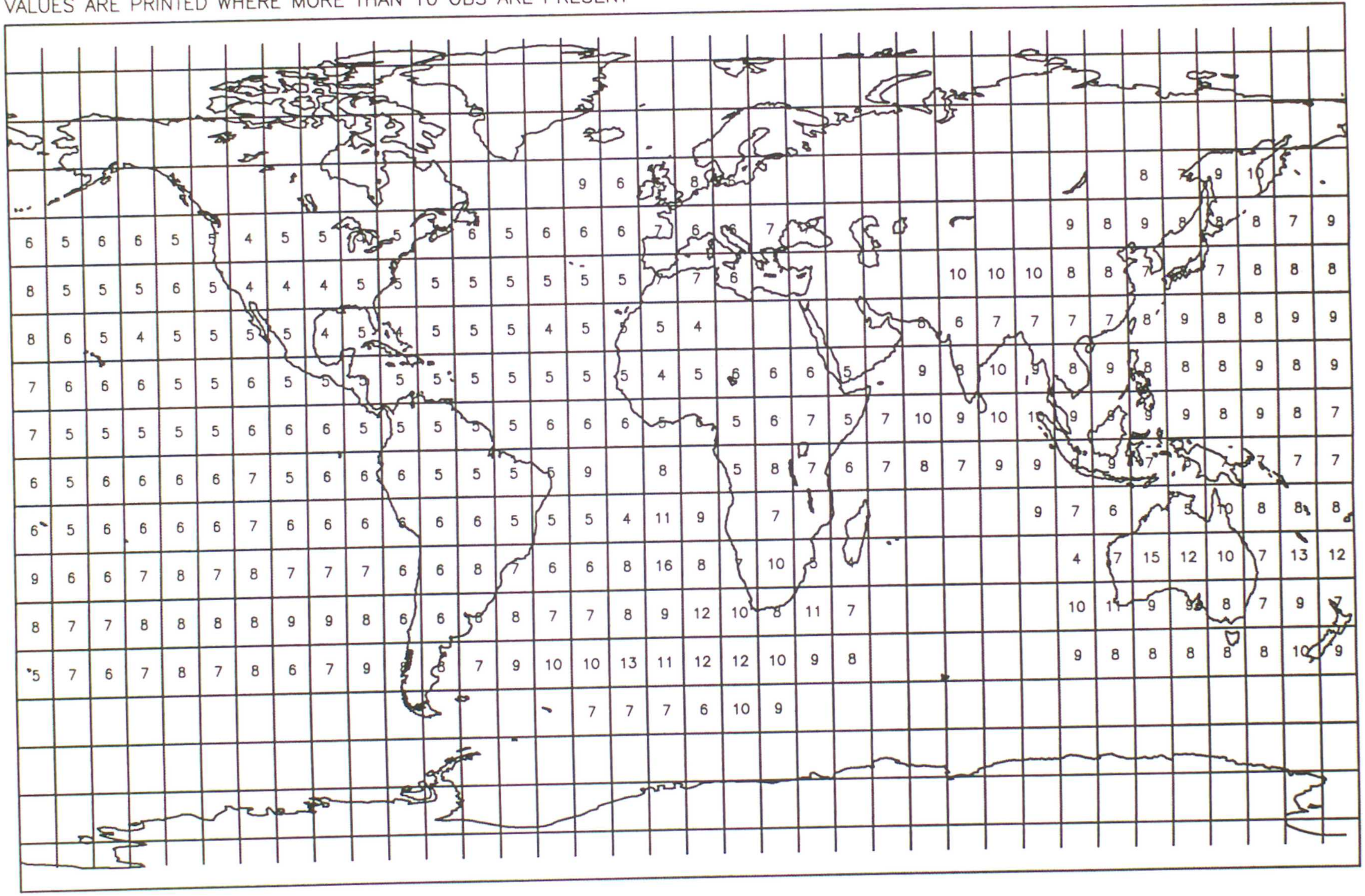


SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
AUGUST 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



-3.7 .6 -.8 -1.2 .5 -5.4
.8 .6 .4 -.1 -1.0 -1.0 -.4 -.4 -.6 .9 -.6 -.5 -1.6 -.8 -1.4 -2.2 -.7 -1.0 -2.2 -1.1 .0 -2.0 -1.2 .8 1.0 1.1
-.5 -.4 .2 -.4 -1.4 -.4 -.1 -.5 -.1 -.7 -1.0 -.1 -.1 -.1 -.2 -.4 -1.0 .6 -.7 .5 1.1 2.0 -1.5 1.0 1.0 .7 2.5 1.2 1.8 1.5
.1 -.8 -1.2 .4 .6 .3 .8 -.1 .2 .7 .2 .7 .3 .5 .3 .2 1.1 .2 -.3 2.7 .8 2.1 -.3 .6 1.6 .8 2.3 1.8 1.3 2.2 2.2
1.5 1.2 1.0 1.1 .7 .6 1.0 1.7 1.4 .5 1.4 1.1 1.5 1.5 1.0 .0 .7 .8 -.2 -.8 -1.6 -3.0 .9 3.1 1.2 -.3 .1 1.3 1.9 -.6 -.5 .7 .1 1.9 2.0
.5 .9 1.1 1.1 .4 1.0 2.1 1.8 2.0 1.2 1.5 1.1 1.0 .7 .0 -.8 -1.4 -.6 -1.6 -1.0 -.3 -.9 .0 -.6 3.4 2.2 2.1 1.5 .0 -.1 .6 -.5 -.8 -.3 -.8 -.5
1.1 1.3 1.5 1.3 1.5 1.0 1.3 1.3 1.4 .8 .6 1.1 1.5 1.7 .9 -.2 .6 1.0 4.1 2.0 .2 -.4 -1.6 -1.8 .4 1.4 3.2 2.8 1.2 .3 .3 2.2 1.7 .4
1.2 1.4 1.4 1.2 .7 .9 -.2 .1 -.4 -1.0 .3 -.3 -1.0 .4 .3 -.2 .1 -7.8 -2.4 .5 3.9 1.9 1.1 2.6 1.9 2.6 2.5 1.2
-2.4 -.3 -.9 -1.7 -1.6 -1.8 -2.0 -1.4 -2.0 -1.8 -.4 .1 -1.0 1.6 -.8 -.8 -2.5 -6.3 -2.7 -2.4 -3.3 -1.8 .4 -.8 -5.0 -4.5 -4.2 -3.6 -2.3 -8.2 -6.1
-1.5 -.6 -1.5 -1.5 -1.7 -1.7 -2.3 -3.9 -4.4 -3.8 -1.5 -.7 .5 -1.1 -1.6 -1.0 -.5 -.1 1.6 -1.8 -3.6 -2.8 -1.4 -3.0 -5.0 -3.2 -2.4 -.9 -1.7 -3.3 -1.8
-.5 -.3 .6 -1.1 -.8 -.5 .4 .0 -.7 -.2 -.2 -2.3 -1.9 -2.7 -4.4 -1.6 -3.4 -2.4 -3.7 -3.5 -.7 -3.7 -1.3 -3.0 -3.0 -2.7 -3.7 -3.4 -2.3 -4.3 -1.7
-1.4 1.9 -1.2 -.3 -2.8 .6

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
AUGUST 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


9 6 8 8 7 9 10
6 5 6 6 5 5 4 5 5 5 6 5 6 6 6 7 6 6 7 9 8 9 8 8 8 7 9
8 5 5 5 6 5 4 4 4 5 5 5 5 5 5 5 5 7 7 6 10 10 10 8 8 7 7 8 8 8
8 6 5 4 5 5 5 5 4 5 4 5 5 5 4 5 5 5 4 8 6 7 7 7 7 8 9 8 8 9 9
7 6 6 6 5 5 6 5 5 5 5 5 5 5 5 5 5 4 5 6 6 6 5 9 8 10 9 8 9 8 8 8 9 8 9
7 5 5 5 5 5 6 6 6 5 5 5 5 5 6 6 6 5 6 5 6 7 5 7 10 9 10 10 9 8 9 9 8 9 8 7
6 5 6 6 6 6 7 5 6 6 6 5 5 5 5 9 8 5 8 7 6 7 8 7 9 9 9 9 9 7 7 7 7 7
6 5 6 6 6 6 7 6 6 6 6 6 6 5 5 5 4 11 9 7 9 7 6 5 10 8 8 8
9 6 6 7 8 7 8 7 7 7 6 6 8 7 6 6 8 16 8 7 10 5 4 7 15 12 10 7 13 12
8 7 7 8 8 8 8 9 9 8 6 6 8 8 7 7 8 9 12 10 8 11 7 10 11 9 9 8 7 9 7
5 7 6 7 8 7 8 6 7 9 8 8 7 9 10 10 13 11 12 12 10 9 8 9 8 8 8 8 8 10 9
7 7 7 6 10 9

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: August, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-12, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

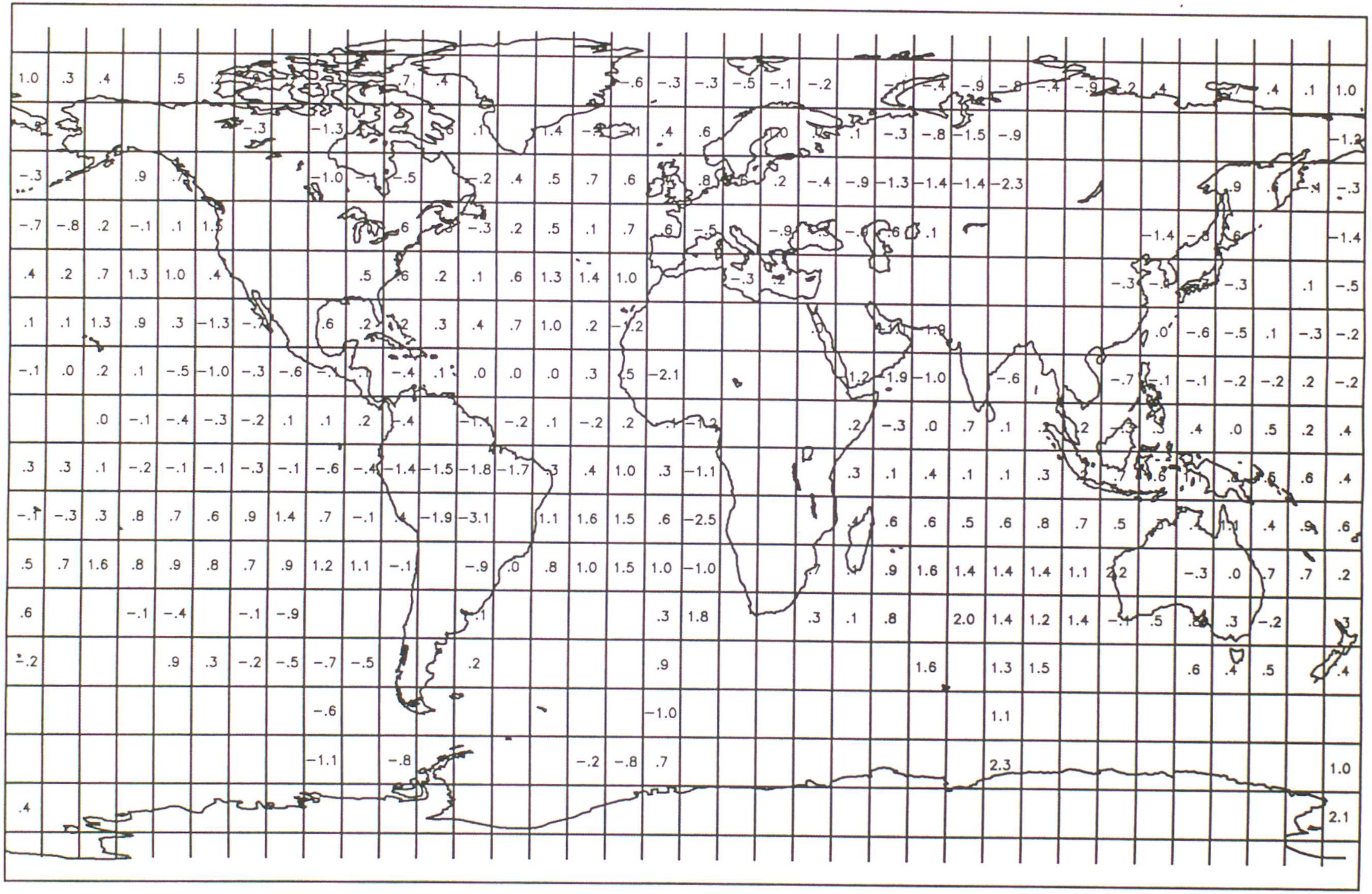
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA

FIGURE 25

AUGUST 1997

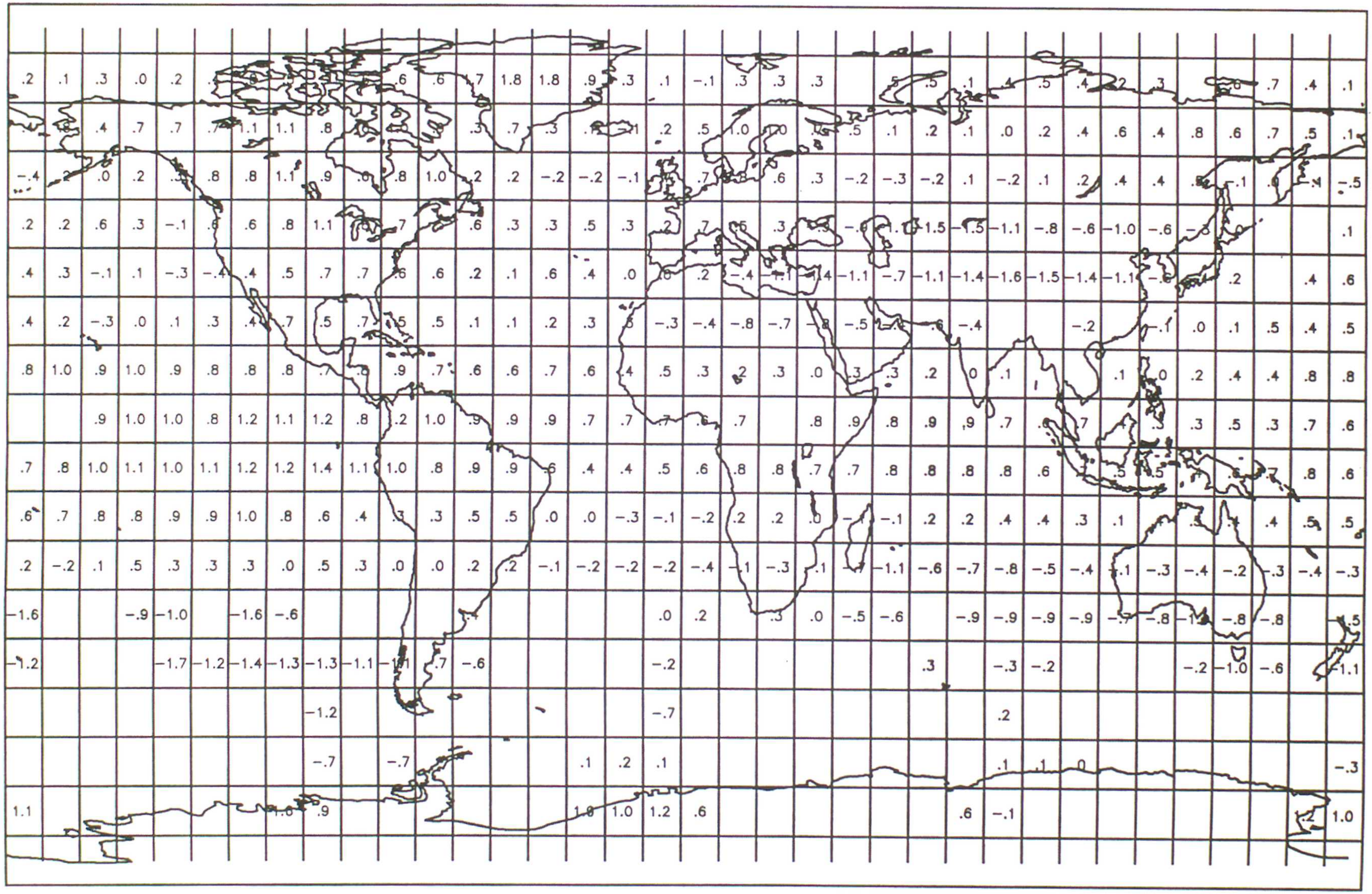
NOAA–12, USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

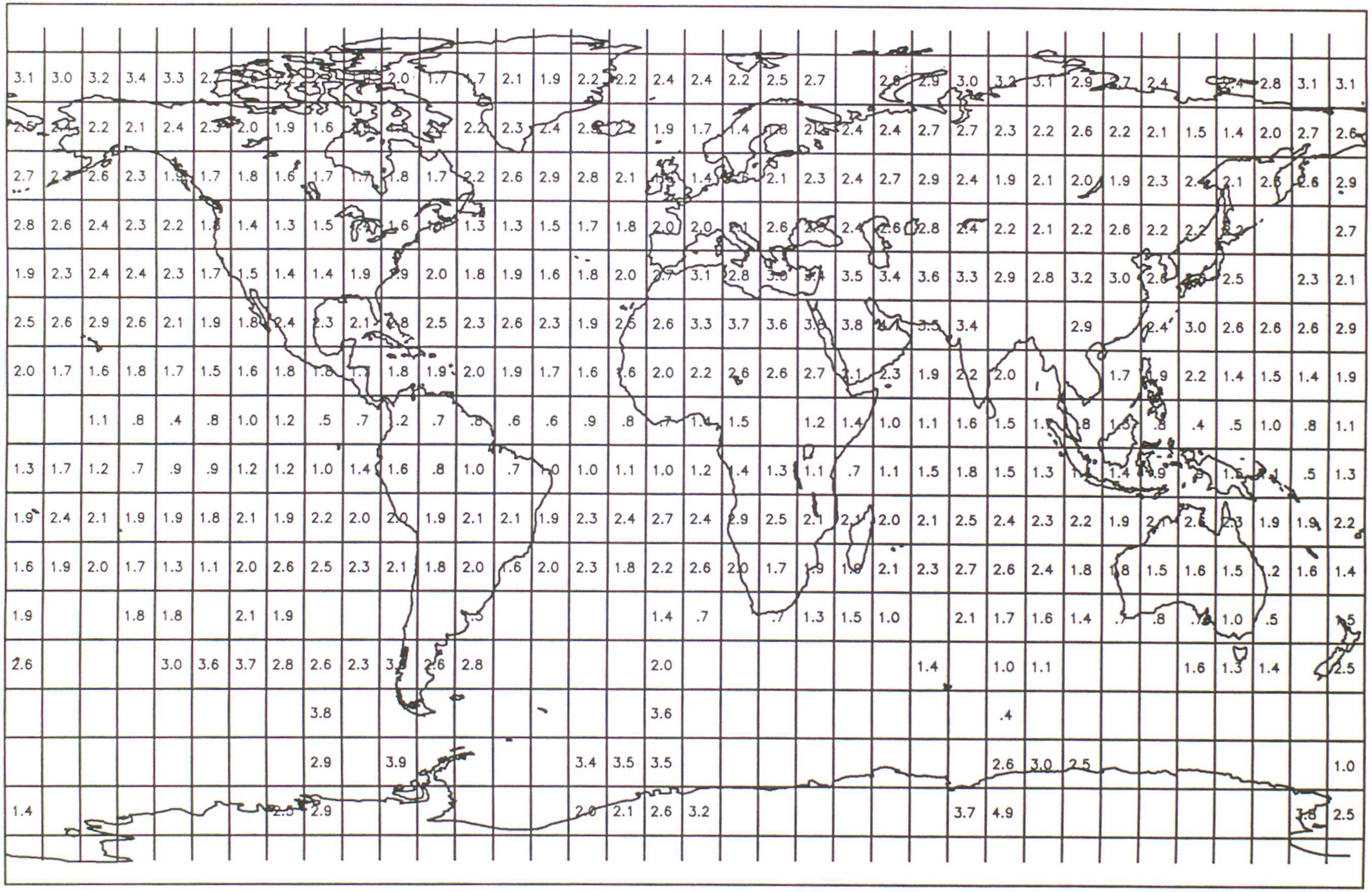

1.0 .3 .4 .5 .7 .4 .6 –.3 –.3 –.5 –.1 –.2 .4 –.9 –.8 –.4 –.9 .2 .4 .7 .4 .1 1.0
.8 –.3 –1.3 .6 .1 1.4 –.1 .4 .6 .0 .1 –.3 –.8 –1.5 –.9 –1.2
–.3 .2 .9 .7 –1.0 –.5 –.2 .4 .5 .7 .6 .8 .2 –.4 –.9 –1.3 –1.4 –1.4 –2.3 .9 .6 –.4 –.3
–.7 –.8 .2 –.1 .1 1.5 .6 –.3 .2 .5 .1 .7 .6 –.5 –.9 –.6 .6 .1 –1.4 –.8 .6 –1.4
.4 .2 .7 1.3 1.0 .4 .5 .6 .2 .1 .6 1.3 1.4 1.0 –.3 .2 –.3 –.7 –.3 .1 –.5
.1 .1 1.3 .9 .3 –1.3 –.7 .6 .2 .2 .3 .4 .7 1.0 .2 –1.2 .1 –1.8 .0 –.6 –.5 .1 –.3 –.2
–.1 .0 .2 .1 –.5 –1.0 –.3 –.6 –.4 .1 .0 .0 .0 .3 .5 –2.1 1.2 –1.9 –1.0 –.6 –.7 –.1 –.1 –.2 –.2 .2 –.2
.0 –.1 –.4 –.3 –.2 .1 .1 .2 .4 –.1 –.2 .1 –.2 .2 –.1 –1.2 .2 –.3 .0 .7 .1 .2 .3 .4 .0 .5 .2 .4
.3 .3 .1 –.2 –.1 –.1 –.3 –.1 –.6 –.4 –1.4 –1.5 –1.8 –1.7 .3 .4 1.0 .3 –1.1 .3 .1 .4 .1 .1 .3 .7 .6 .1 .5 .6 .4
–.1 –.3 .3 .8 .7 .6 .9 1.4 .7 –.1 .4 –1.9 –3.1 1.1 1.6 1.5 .6 –2.5 .4 .6 .6 .5 .6 .8 .7 .5 .1 1.1 .4 .9 .6
.5 .7 1.6 .8 .9 .8 .7 .9 1.2 1.1 –.1 –.9 .0 .8 1.0 1.5 1.0 –1.0 .7 .1 .9 1.6 1.4 1.4 1.4 1.1 2.2 –.3 .0 .7 .7 .2
.6 –.1 –.4 –.1 –.9 .1 .3 1.8 .3 .1 .8 2.0 1.4 1.2 1.4 –.1 .5 .8 .3 –.2 .3
.2 .9 .3 –.2 –.5 –.7 –.5 .2 .9 1.6 1.3 1.5 .6 .4 .5 .4
–.6 –1.0 1.1
–1.1 –.8 –.2 –.8 .7 2.3 1.0
.4 2.1

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
AUGUST 1997
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 26

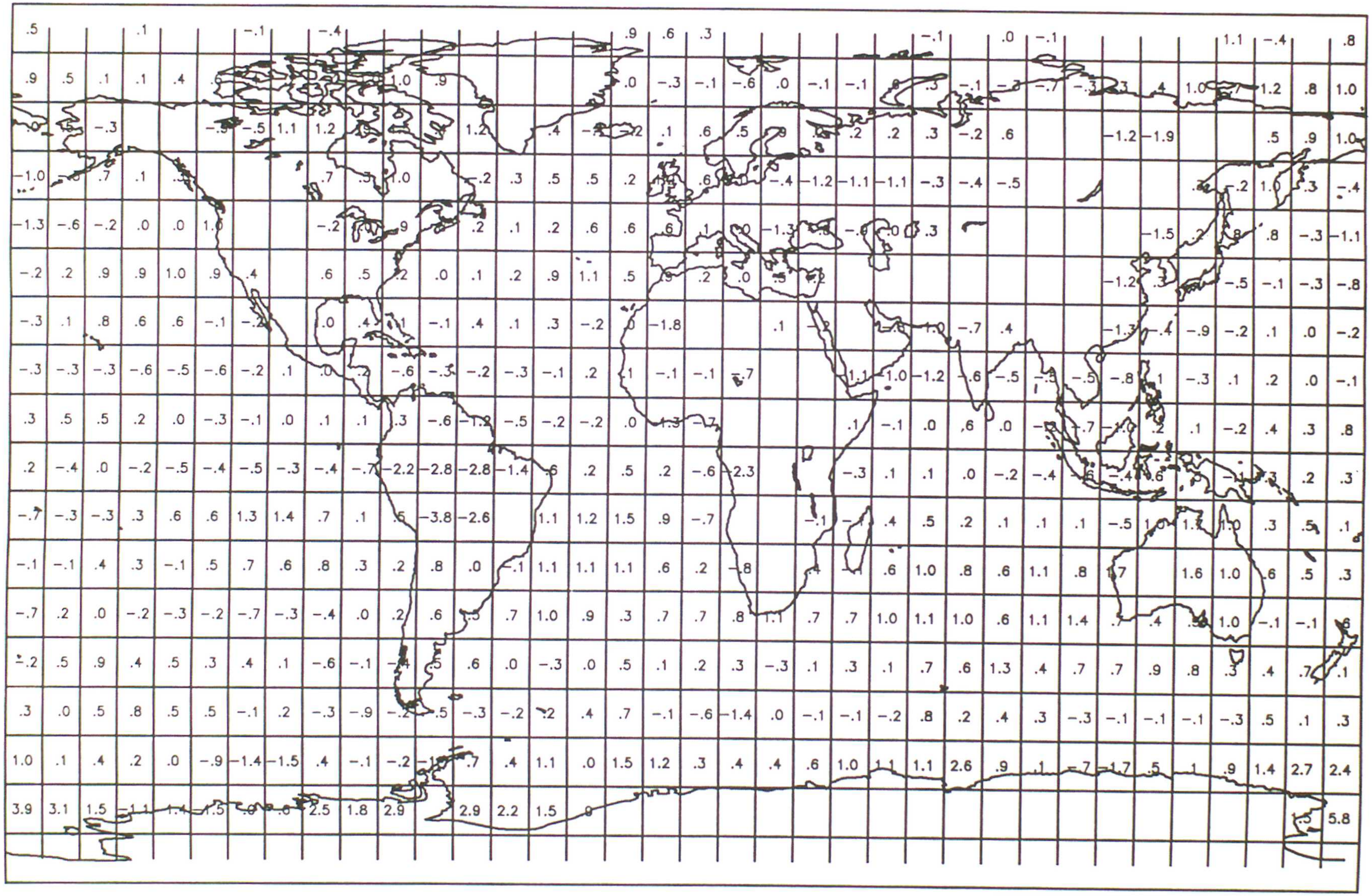

.2 .1 .3 .0 .2 .6 .6 .7 1.8 1.8 .9 .3 .1 –.1 .3 .3 .3 .5 .5 .1 .4 .5 .4 .2 .3 .6 .7 .4 .1
.4 .7 .7 .7 1.1 1.1 .8 .3 .7 .3 –.1 .2 .5 1.0 1.0 .5 .1 .2 .1 .0 .2 .4 .6 .4 .8 .6 .7 .5 .1
–.4 .2 .0 .2 .3 .8 .8 1.1 .9 .8 1.0 .2 .2 –.2 –.2 –.1 .7 .6 .3 –.2 –.3 –.2 .1 –.2 .1 .2 .4 .4 –.1 –.5
.2 .2 .6 .3 –.1 .6 .6 .8 1.1 .7 .6 .3 .3 .5 .3 .2 .7 .5 .3 –1.5 –1.5 –1.1 –.8 –.6 –1.0 –.6 .1
.4 .3 –.1 .1 –.3 –.4 .4 .5 .7 .7 .6 .6 .2 .1 .6 .4 .0 .2 –.4 –1.1 –1.4 –1.1 –.7 –1.1 –1.4 –1.6 –1.5 –1.4 –1.1 .2 .4 .6
.4 .2 –.3 .0 .1 .3 .4 .7 .5 .7 .5 .5 .1 .1 .2 .3 –.3 –.4 –.8 –.7 –.5 –.4 –.2 .0 .1 .5 .4 .5
.8 1.0 .9 1.0 .9 .8 .8 .8 .9 .7 .6 .6 .7 .6 .4 .5 .3 .2 .3 .0 .3 .3 .2 0 .1 .1 0 .2 .4 .4 .8 .8
.9 1.0 1.0 .8 1.2 1.1 1.2 .8 .2 1.0 .9 .9 .9 .7 .7 .7 .7 .8 .9 .8 .9 .9 .7 .7 .3 .5 .3 .7 .6
.7 .8 1.0 1.1 1.0 1.1 1.2 1.2 1.4 1.1 1.0 .8 .9 .9 .6 .4 .4 .5 .6 .8 .8 .7 .7 .8 .8 .8 .8 .6 .5 .5 .7 .8 .6
.6 .7 .8 .8 .9 .9 1.0 .8 .6 .4 .3 .3 .5 .5 .0 .0 –.3 –.1 –.2 .2 .2 .0 –.1 –.1 .2 .2 .4 .4 .3 .1 .4 .5 .5
.2 –.2 .1 .5 .3 .3 .3 .0 .5 .3 .0 .0 .2 .2 –.1 –.2 –.2 –.2 –.4 –.1 –.3 .1 –.7 –1.1 –.6 –.7 –.8 –.5 –.4 –.1 –.3 –.4 –.2 –.3 –.4 –.3
–1.6 –.9 –1.0 –1.6 –.6 .0 .2 .3 .0 –.5 –.6 –.9 –.9 –.9 –.9 –.7 –.8 –1.2 –.8 –.8 –1.5
–1.2 –1.7 –1.2 –1.4 –1.3 –1.3 –1.1 –1.1 .7 –.6 –.2 .3 –.3 –.2 –.2 –1.0 –.6 –1.1
–1.2 –.7 .2
–.7 –.7 .1 .2 .1 .1 .1 0 –.3
1.1 1.0 .9 1.0 1.0 1.2 .6 .6 –.1 1.2 1.0

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
AUGUST 1997
FIGURE 27
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

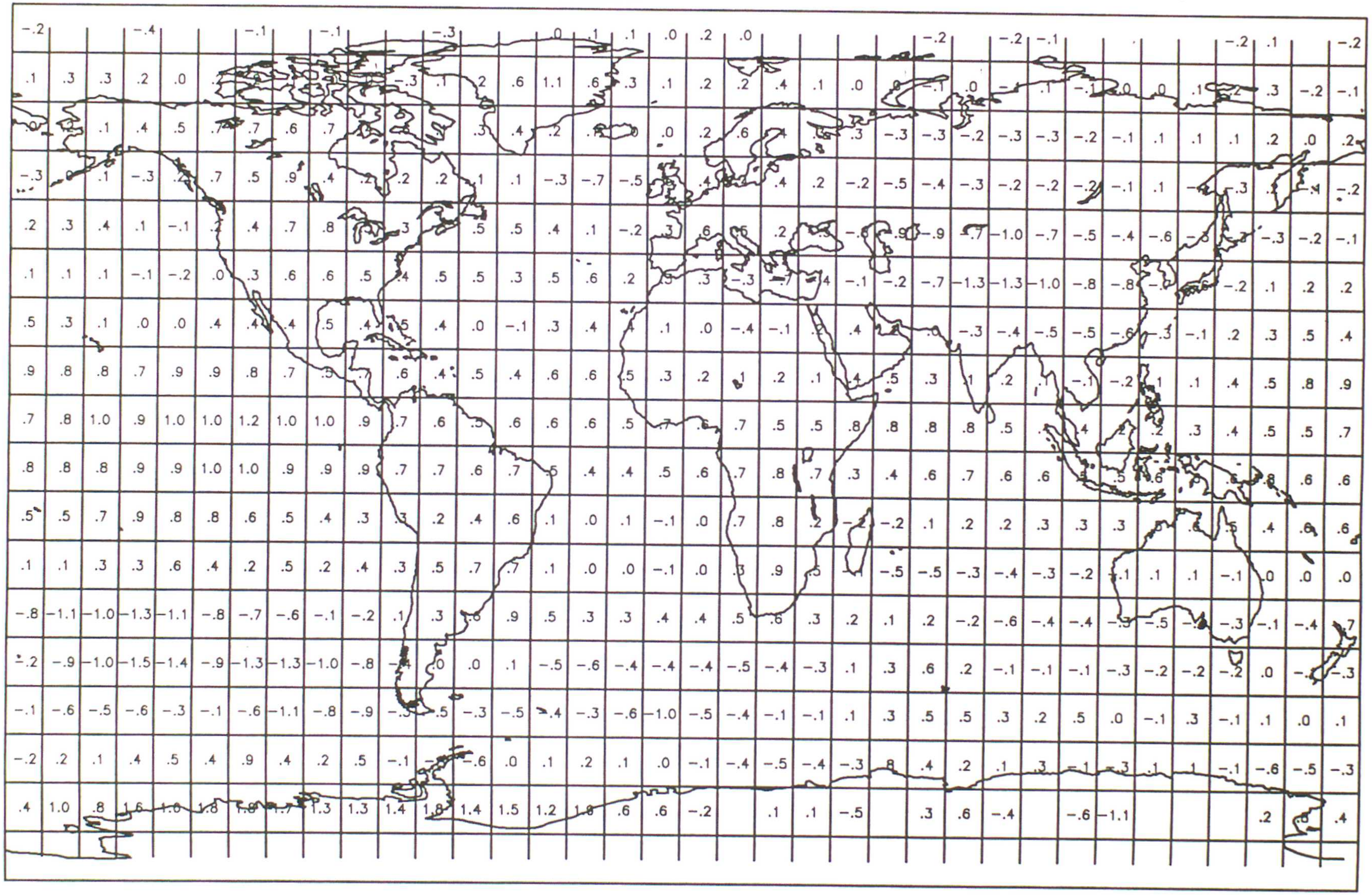

3.1 3.0 3.2 3.4 3.3 2.7 2.0 1.7 .7 2.1 1.9 2.2 2.2 2.4 2.4 2.2 2.5 2.7 2.8 2.9 3.0 3.2 3.1 2.9 2.7 2.4 2.4 2.8 3.1 3.1
2.5 2.4 2.2 2.1 2.4 2.3 2.0 1.9 1.6 2.2 2.3 2.4 2.5 2.2 1.9 1.7 1.4 1.8 2.3 2.4 2.4 2.7 2.7 2.3 2.2 2.6 2.2 2.1 1.5 1.4 2.0 2.7 2.6
2.7 2.3 2.6 2.3 1.9 1.7 1.8 1.6 1.7 1.7 1.8 1.7 2.2 2.6 2.9 2.8 2.1 1.4 2.1 2.3 2.4 2.7 2.9 2.4 1.9 2.1 2.0 1.9 2.3 2.4 2.1 2.6 2.6 2.9
2.8 2.6 2.4 2.3 2.2 1.8 1.4 1.3 1.5 1.6 1.3 1.3 1.5 1.7 1.8 2.0 2.0 2.1 2.6 2.5 2.4 2.6 2.8 2.4 2.2 2.1 2.2 2.6 2.2 2.2 2.2 2.7
1.9 2.3 2.4 2.4 2.3 1.7 1.5 1.4 1.4 1.9 1.9 2.0 1.8 1.9 1.6 1.8 2.0 2.7 3.1 2.8 3.0 3.4 3.5 3.4 3.6 3.3 2.9 2.8 3.2 3.0 2.6 2.5 2.3 2.1
2.5 2.6 2.9 2.6 2.1 1.9 1.8 2.4 2.3 2.1 2.8 2.5 2.3 2.6 2.3 1.9 2.5 2.6 3.3 3.7 3.6 3.9 3.8 3.4 3.4 2.9 2.4 3.0 2.6 2.6 2.6 2.9
2.0 1.7 1.6 1.8 1.7 1.5 1.6 1.8 1.8 1.7 1.8 1.9 2.0 1.9 1.7 1.6 1.6 2.0 2.2 2.6 2.6 2.7 2.1 2.3 1.9 2.2 2.0 1.7 1.9 2.2 1.4 1.5 1.4 1.9
1.1 .8 .4 .8 1.0 1.2 .5 .7 .2 .7 .8 .6 .6 .9 .8 .7 1.4 1.5 1.2 1.4 1.0 1.1 1.6 1.5 1.8 1.8 1.5 .8 .4 .5 1.0 .8 1.1
1.3 1.7 1.2 .7 .9 .9 1.2 1.2 1.0 1.4 1.6 .8 1.0 .7 1.0 1.0 1.1 1.0 1.2 1.4 1.3 1.1 .7 1.1 1.5 1.8 1.5 1.3 1.4 1.4 1.9 .5 1.3
1.9 2.4 2.1 1.9 1.9 1.8 2.1 1.9 2.2 2.0 2.0 1.9 2.1 2.1 1.9 2.3 2.4 2.7 2.4 2.9 2.5 2.1 2.1 2.0 2.1 2.5 2.4 2.3 2.2 1.9 2.1 2.6 2.3 1.9 1.9 2.2
1.6 1.9 2.0 1.7 1.3 1.1 2.0 2.6 2.5 2.3 2.1 1.8 2.0 1.6 2.0 2.3 1.8 2.2 2.6 2.0 1.7 1.9 1.9 2.1 2.3 2.7 2.6 2.4 1.8 1.8 1.5 1.6 1.5 1.2 1.6 1.4
1.9 1.8 1.8 2.1 1.9 1.5 1.4 .7 .7 1.3 1.5 1.0 2.1 1.7 1.6 1.4 .7 .8 1.0 .5 .5
2.6 3.0 3.6 3.7 2.8 2.6 2.3 3.3 2.6 2.8 2.0 1.4 1.0 1.1 1.6 1.3 1.4 2.5
3.8 3.6 .4
2.9 3.9 3.4 3.5 3.5 2.6 3.0 2.5 1.0
1.4 2.5 2.9 2.0 2.1 2.6 3.2 3.7 4.9 3.8 2.5

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
AUGUST 1997
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 28



500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
AUGUST 1997
FIGURE 29
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
AUGUST 1997
FIGURE 30
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

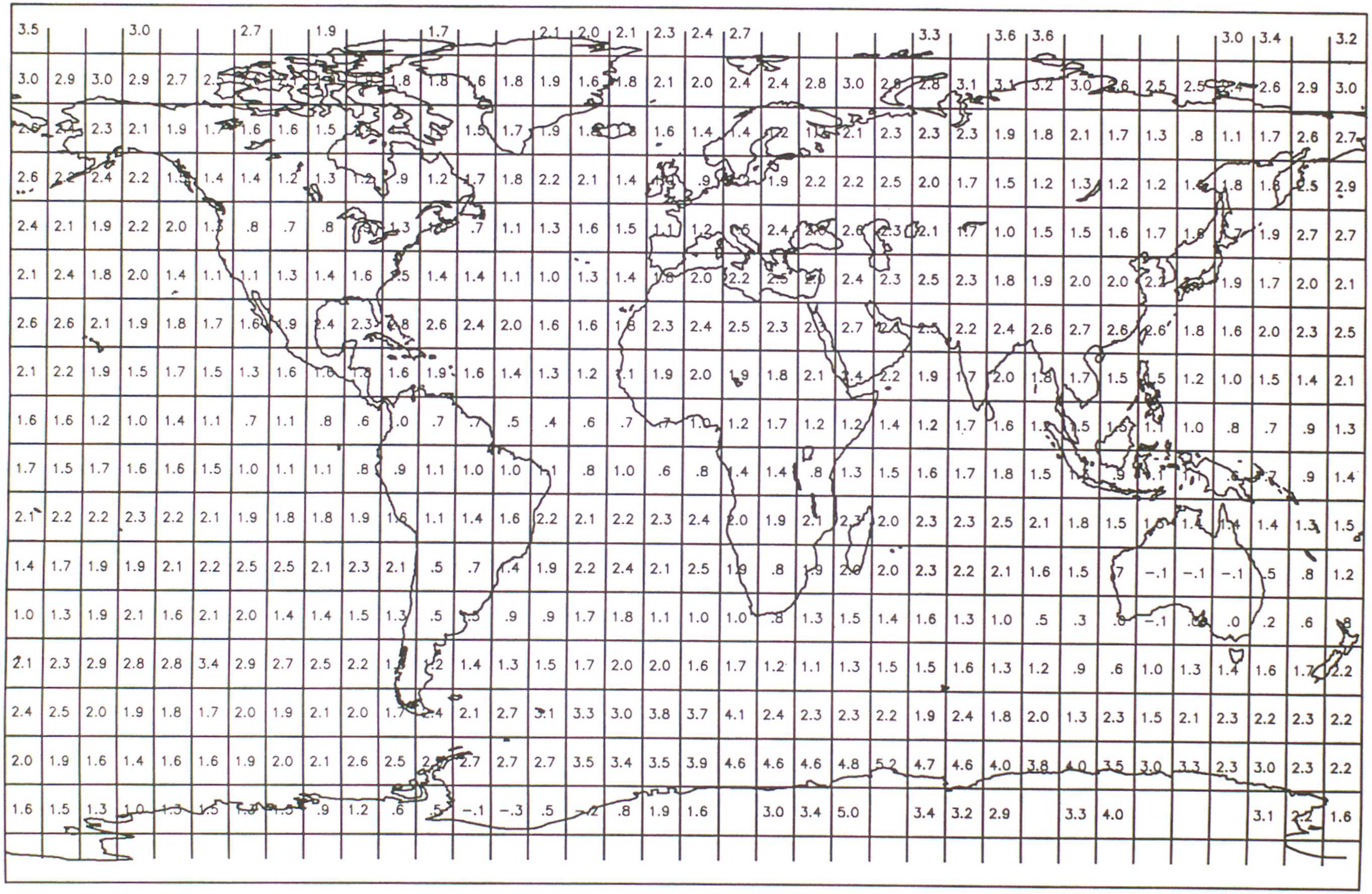


TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13903	26.6	-39.7	ALL	MSLP	SUR	276	0	0	0.7	1.1	1.3
13905	23.2	-44.2	ALL	MSLP	SUR	274	0	0	0.9	0.7	1.1
13906	20.0	-50.1	ALL	MSLP	SUR	267	0	0	1.0	0.7	1.3
13910	24.9	-44.9	ALL	MSLP	SUR	267	0	0	0.8	0.2	0.8
13911	27.6	-51.2	ALL	MSLP	SUR	285	0	0	1.0	1.1	1.5
13912	17.7	-61.8	ALL	MSLP	SUR	292	0	0	1.2	1.4	1.9
13913	20.4	-48.2	ALL	MSLP	SUR	252	0	0	1.0	1.3	1.6
13915	24.7	-48.3	ALL	MSLP	SUR	104	0	0	0.9	-0.4	1.0
39708	39.6	-30.0	ALL	MSLP	SUR	20	0	0	2.5	-0.3	2.5
41505	15.7	-51.8	ALL	MSLP	SUR	331	0	0	0.9	0.9	1.2
41506	15.5	-47.3	ALL	MSLP	SUR	323	0	0	0.9	0.8	1.2
41521	16.7	-54.8	ALL	MSLP	SUR	328	0	0	0.8	0.8	1.2
41524	10.7	-44.5	ALL	MSLP	SUR	320	2	1	1.0	0.4	1.1
41525	10.5	-39.9	ALL	MSLP	SUR	319	2	1	1.0	0.6	1.1
41529	35.2	-32.2	ALL	MSLP	SUR	250	0	0	0.6	0.4	0.7
41530	30.1	-29.8	ALL	MSLP	SUR	169	0	0	0.6	0.3	0.7
41613	22.8	-71.4	ALL	MSLP	SUR	17	0	0	0.8	0.2	0.8
41922	28.3	-53.2	ALL	MSLP	SUR	288	0	0	1.1	1.9	2.2
41924	23.4	-51.3	ALL	MSLP	SUR	262	0	0	0.9	-0.7	1.1
41943	14.5	-64.3	ALL	MSLP	SUR	190	0	0	1.0	0.8	1.3
42534	36.2	-75.7	ALL	MSLP	SUR	2	0	0	0.1	0.3	0.4
44513	56.2	-13.1	ALL	MSLP	SUR	330	0	0	0.9	0.3	1.0
44605	47.3	-27.5	ALL	MSLP	SUR	888	0	0	1.1	0.4	1.2
44607	49.4	-32.0	ALL	MSLP	SUR	938	0	0	1.1	0.5	1.2
44608	54.2	-28.4	ALL	MSLP	SUR	1014	0	0	1.0	0.2	1.1
44613	62.9	-29.5	ALL	MSLP	SUR	1093	8	1	1.1	0.1	1.1
44621	54.5	-39.4	ALL	MSLP	SUR	655	0	0	1.1	-0.1	1.1
44624	57.9	-21.7	ALL	MSLP	SUR	1105	3	0	1.2	0.1	1.2
44726	59.6	-8.1	ALL	MSLP	SUR	1113	1	0	0.9	0.3	0.9
44727	58.2	-37.4	ALL	MSLP	SUR	1765	11	1	1.1	-0.1	1.1
44728	61.1	-23.5	ALL	MSLP	SUR	1143	3	0	1.1	0.2	1.1
44742	43.8	-25.9	ALL	MSLP	SUR	369	17	5	4.1	1.6	4.4
44743	43.7	-13.4	ALL	MSLP	SUR	594	5	1	1.2	0.3	1.2
44760	32.2	-57.5	ALL	MSLP	SUR	329	1	0	0.8	0.3	0.9
44762	42.0	-20.4	ALL	MSLP	SUR	469	0	0	0.8	0.1	0.8
44767	63.9	-7.5	ALL	MSLP	SUR	1	0	0	0.0	5.5	5.5
44768	58.7	-34.9	ALL	MSLP	SUR	792	0	0	0.9	0.3	1.0
44769	51.6	-32.6	ALL	MSLP	SUR	666	0	0	1.0	0.2	1.0
44773	59.4	-32.0	ALL	MSLP	SUR	803	0	0	1.0	-0.1	1.0
44775	62.0	-32.5	ALL	MSLP	SUR	840	0	0	0.9	0.3	1.0
44779	45.6	-30.5	ALL	MSLP	SUR	769	4	1	1.3	0.4	1.3
44825	40.3	-73.2	ALL	MSLP	SUR	1	0	0	0.0	-0.4	0.4
44901	56.9	-54.6	ALL	MSLP	SUR	165	0	0	0.9	0.6	1.1
44911	56.6	-18.3	ALL	MSLP	SUR	61	0	0	1.0	0.4	1.1
44912	51.4	-41.2	ALL	MSLP	SUR	138	0	0	1.0	0.8	1.3
44924	61.3	-57.5	ALL	MSLP	SUR	4	0	0	1.2	5.8	5.9
44925	60.7	-53.9	ALL	MSLP	SUR	173	0	0	0.9	0.7	1.1
62503	30.4	-15.3	ALL	MSLP	SUR	498	0	0	0.8	0.4	0.9
62513	45.3	-18.1	ALL	MSLP	SUR	22	0	0	0.5	1.0	1.2
62515	45.2	-17.7	ALL	MSLP	SUR	636	0	0	1.1	0.5	1.2
62518	40.6	-13.7	ALL	MSLP	SUR	153	0	0	1.7	0.3	1.7
62552	54.9	-14.2	ALL	MSLP	SUR	799	1	0	1.5	-0.1	1.5
62553	48.0	-21.7	ALL	MSLP	SUR	651	4	1	1.2	0.1	1.2
62554	51.9	-17.5	ALL	MSLP	SUR	658	0	0	1.0	0.3	1.0
62555	44.9	-18.5	ALL	MSLP	SUR	616	0	0	1.0	0.0	1.0
62556	50.3	-16.6	ALL	MSLP	SUR	694	0	0	1.1	0.3	1.1
62697	52.1	-39.1	ALL	MSLP	SUR	862	18	2	1.3	0.0	1.3
62712	56.9	-11.1	ALL	MSLP	SUR	689	0	0	0.9	0.4	1.0
62713	40.3	-27.9	ALL	MSLP	SUR	779	2	0	0.9	0.4	1.0
62803	60.9	-11.1	ALL	MSLP	SUR	1532	2	0	1.0	0.1	1.0

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62804	56.9	-15.1	ALL	MSLP	SUR	717	0	0	0.9	0.2	0.9
62927	51.6	-23.1	ALL	MSLP	SUR	129	0	0	1.0	0.7	1.2
64528	63.6	-36.0	ALL	MSLP	SUR	1700	2	0	1.0	-0.4	1.1
64561	54.2	-48.7	ALL	MSLP	SUR	895	6	1	1.2	0.2	1.2
64563	61.1	-54.0	ALL	MSLP	SUR	1561	1	0	0.9	-0.4	1.0
65593	60.9	-52.9	ALL	MSLP	SUR	22	1	5	4.4	-2.8	5.2
65594	61.4	-23.0	ALL	MSLP	SUR	1844	3	0	1.0	0.0	1.0
65596	50.9	-48.5	ALL	MSLP	SUR	624	1	0	1.3	-0.1	1.3
65597	58.9	-49.1	ALL	MSLP	SUR	1522	3	0	1.0	-0.3	1.0
65598	50.6	-53.8	ALL	MSLP	SUR	428	1	0	1.2	-0.7	1.4
88888	44.7	-63.6	ALL	MSLP	SUR	20	0	0	0.8	-4.6	4.7
WIND SPEED											
39708	39.6	-30.0	ALL	SPEED	SUR	17	0	0	2.9	2.3	3.7
41505	15.7	-51.8	ALL	SPEED	SUR	22	0	0	3.9	18.4	18.8
41506	15.5	-47.3	ALL	SPEED	SUR	27	0	0	4.2	17.0	17.5
41521	16.7	-54.8	ALL	SPEED	SUR	18	1	6	3.1	17.9	18.1
41524	10.7	-44.5	ALL	SPEED	SUR	28	4	14	6.0	13.5	14.7
41525	10.5	-39.9	ALL	SPEED	SUR	27	0	0	7.1	12.9	14.7
41530	30.1	-29.8	ALL	SPEED	SUR	152	0	0	1.5	-1.3	2.0
41613	22.8	-71.4	ALL	SPEED	SUR	16	0	0	0.9	-1.6	1.9
44621	54.5	-39.4	ALL	SPEED	SUR	79	0	0	1.6	-0.9	1.8
44624	57.9	-21.7	ALL	SPEED	SUR	771	5	1	2.0	-0.8	2.2
44726	59.6	-8.1	ALL	SPEED	SUR	743	1	0	1.7	-2.1	2.7
44742	43.8	-25.9	ALL	SPEED	SUR	265	0	0	1.5	-0.2	1.5
44762	42.0	-20.4	ALL	SPEED	SUR	301	0	0	1.4	-0.7	1.6
44767	63.9	-7.5	ALL	SPEED	SUR	1	0	0	0.0	1.8	1.8
44773	59.4	-32.0	ALL	SPEED	SUR	777	0	0	1.8	0.0	1.8
62552	54.9	-14.2	ALL	SPEED	SUR	769	0	0	1.6	-0.7	1.7
62553	48.0	-21.7	ALL	SPEED	SUR	627	0	0	2.0	0.5	2.1
62803	60.9	-11.1	ALL	SPEED	SUR	168	2	1	3.4	-6.5	7.4
65598	50.6	-53.8	ALL	SPEED	SUR	1	0	0	0.0	12.7	12.7
WIND DIRECTION											
39708	39.6	-30.0	ALL	DIRN.	SUR	15	0	0	41.9	-6.2	42.3
41505	15.7	-51.8	ALL	DIRN.	SUR	22	0	0	16.0	44.1	47.0
41506	15.5	-47.3	ALL	DIRN.	SUR	27	0	0	13.6	-17.2	21.9
41521	16.7	-54.8	ALL	DIRN.	SUR	18	1	6	12.2	-27.4	30.0
41524	10.7	-44.5	ALL	DIRN.	SUR	28	4	14	78.5	26.0	82.7
41525	10.5	-39.9	ALL	DIRN.	SUR	27	0	0	26.8	12.0	29.4
41530	30.1	-29.8	ALL	DIRN.	SUR	72	0	0	13.1	11.1	17.2
41613	22.8	-71.4	ALL	DIRN.	SUR	14	0	0	13.5	4.7	14.3
44621	54.5	-39.4	ALL	DIRN.	SUR	71	0	0	15.0	-16.3	22.1
44624	57.9	-21.7	ALL	DIRN.	SUR	701	5	1	61.7	-33.0	70.0
44726	59.6	-8.1	ALL	DIRN.	SUR	448	1	0	14.8	-4.1	15.4
44742	43.8	-25.9	ALL	DIRN.	SUR	191	0	0	16.0	-7.5	17.7
44762	42.0	-20.4	ALL	DIRN.	SUR	230	0	0	17.6	-3.7	18.0
44767	63.9	-7.5	ALL	DIRN.	SUR	1	0	0	0.0	117.7	117.7
44773	59.4	-32.0	ALL	DIRN.	SUR	700	0	0	23.7	-2.1	23.8
62552	54.9	-14.2	ALL	DIRN.	SUR	576	0	0	17.0	0.3	17.0
62553	48.0	-21.7	ALL	DIRN.	SUR	517	0	0	26.3	0.5	26.3
62803	60.9	-11.1	ALL	DIRN.	SUR	153	2	1	67.8	8.4	68.3
65598	50.6	-53.8	ALL	DIRN.	SUR	1	0	0	0.0	-155.7	155.7

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures:
Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3066	0	2	1.9	0.0	3106	0	2	0	7.8	1.1
ACA	1966	1	3	2.2	0.1	2010	0	2	0	6.8	0.9
AEA	459	1	100	2.5	0.8	505	0	3	0	8.8	1.0
AEL	399	1	3	1.9	-0.6	471	0	4	0	9.1	0.5
AEY	25	0	0	0.6	0.1	26	0	0	0	6.7	1.0
AFL	223	0	5	2.3	0.9	220	0	4	0	9.0	1.2
AFR	1030	0	7	2.0	0.3	1079	0	9	0	9.1	1.2
AIH	241	2	5	1.8	0.1	256	0	5	0	9.8	1.2
AJM	28	4	4	1.1	-0.2	27	0	11	0	13.9	-1.2
AMT	44	0	16	2.0	0.5	47	0	19	0	13.6	2.5
AMX	148	3	7	1.9	-0.1	155	0	6	0	11.0	0.9
ANZ	228	0	1	2.4	-1.0	228	0	3	1	5.9	0.3
AOM	315	0	2	1.6	0.7	332	0	3	0	8.3	1.6
ARP	21	0	0	1.5	0.2	20	0	5	5	7.3	1.8
AUA	86	1	3	1.9	-0.5	86	0	6	0	10.0	2.1
AVA	165	0	3	2.2	0.4	178	0	4	0	8.5	0.6
AZA	352	2	9	2.7	0.6	357	0	2	0	7.6	0.9
BAL	501	1	18	2.0	-0.4	584	0	17	0	8.4	0.6
BAW	1437	0	10	2.1	-0.1	1491	0	10	0	7.8	1.1
BWA	101	1	100	2.9	2.1	105	0	10	0	12.1	-0.5
CDN	480	0	2	2.0	0.0	483	0	2	1	6.9	1.1
CFG	563	1	3	1.9	-0.9	626	0	3	0	8.2	0.6
CKS	37	0	0	2.5	1.4	40	0	3	0	8.2	1.3
CKT	160	0	3	1.6	0.4	171	1	5	0	10.0	1.9
CLX	234	0	1	2.3	-0.5	239	0	4	0	8.2	0.5
CMM	386	0	2	2.1	0.3	388	0	2	2	6.1	0.5
COA	863	1	2	1.8	0.5	891	0	4	0	9.4	1.0
CRL	291	1	3	2.0	0.2	302	0	4	0	9.1	0.7
CTB	145	1	1	2.3	-0.1	166	0	2	0	7.7	2.4
CTM	52	2	23	2.5	-0.9	56	0	20	0	8.4	2.2
CUB	326	1	11	2.2	1.0	368	0	12	0	10.0	1.3
DAL	2552	0	2	1.9	0.1	2620	0	3	0	8.6	0.9
DHL	223	4	100	3.6	-1.7	225	0	6	0	10.2	1.6
DLH	2722	1	9	2.1	0.2	2782	0	10	2	7.4	1.0
EIN	20	0	5	2.4	-0.6	20	0	5	0	10.2	-0.6
ELY	189	0	5	1.7	-0.3	187	0	8	0	7.8	1.0
EWW	123	3	100	2.3	0.1	127	0	100	0	14.4	3.3
FDX	376	0	3	1.6	0.5	376	0	3	0	8.3	1.4
FIN	490	0	1	2.2	0.4	489	0	3	1	8.1	0.5
GAF	117	2	2	2.3	-0.2	119	0	2	1	7.9	0.7
GTI	46	0	0	2.6	2.0	46	0	0	0	7.9	0.0
HLF	80	3	6	2.0	-0.5	92	0	2	0	6.9	1.5
IBE	1084	1	20	1.8	0.6	1165	0	21	0	9.1	0.9
ICE	689	0	1	1.9	-0.1	691	1	2	0	6.6	0.5
KLM	2348	0	2	2.0	0.2	2445	0	2	0	7.6	0.9
LDA	103	1	10	1.9	-0.9	111	0	7	0	7.0	0.6
LDI	289	0	21	2.0	-1.1	334	0	21	0	9.3	0.6
LIB	125	1	3	2.0	1.0	141	1	6	0	9.4	1.2
LKR	62	2	5	1.6	0.7	67	0	3	0	6.1	0.0
LOT	422	0	3	2.5	-1.2	420	0	1	0	7.4	0.5
LTU	616	0	7	2.0	0.3	659	0	8	0	8.0	1.3
MON	25	0	4	1.7	0.6	28	0	11	0	9.8	2.2
MPH	621	0	2	2.0	-0.1	662	0	3	0	7.8	0.8
NWA	3298	1	2	2.1	0.9	3416	0	3	0	8.5	1.0
PAC	21	14	14	2.5	1.7	21	0	5	0	7.8	1.9
RAM	53	2	4	1.6	-0.3	69	0	4	0	7.5	-0.2
RCH	170	1	100	2.4	0.8	172	0	100	0	11.9	2.1
RJA	133	1	3	1.4	0.7	135	0	5	0	9.2	0.0
ROY	386	1	3	2.0	0.0	396	0	5	0	8.7	1.1

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RRR	110	2	17	2.8	-0.7	113	0	15	0	10.9	1.5
SAB	68	0	1	1.3	-0.3	67	0	3	0	6.2	1.7
SAS	1202	0	1	2.3	0.2	1200	0	2	1	7.2	0.0
SIA	102	1	4	2.3	-1.3	103	0	8	0	9.3	1.5
SLR	163	0	26	1.7	-0.4	180	0	24	0	6.7	0.6
SPP	156	1	6	2.3	0.7	171	0	6	0	8.8	1.1
SSV	128	0	2	1.8	0.1	129	1	3	0	5.5	0.4
SVA	186	0	5	2.2	0.0	201	0	100	0	13.3	2.7
SWR	95	1	5	1.8	0.0	98	0	6	1	10.0	1.5
TAP	292	0	5	1.4	-0.3	381	1	6	0	9.6	1.1
THY	25	0	20	3.2	1.1	25	0	24	0	11.7	4.9
TOW	289	0	3	2.1	0.1	293	0	4	0	8.4	1.7
TSC	218	1	7	2.5	0.5	222	1	6	0	9.8	1.1
TWA	1594	1	3	2.2	0.1	1673	0	3	0	9.1	1.3
UAL	1832	0	2	2.2	0.0	1860	0	2	0	7.0	0.9
ULE	215	0	3	1.9	0.6	247	0	5	0	7.9	1.0
UPS	210	1	22	2.8	1.0	212	0	19	0	8.6	0.5
USA	338	0	3	2.0	0.2	342	0	4	0	9.8	1.3
VIR	168	1	2	2.2	-0.1	171	0	1	0	7.8	2.1
VKG	84	1	4	2.0	1.1	84	0	4	0	10.2	1.1
WOA	55	0	9	2.1	0.9	57	0	11	0	7.0	1.7
BA	6088	0	1	1.5	0.5	6087	0	15	0	6.8	1.3
KL	2876	6	6	1.5	0.8	2874	0	7	0	11.1	2.0
LH	563	0	1	1.6	0.2	562	0	1	0	6.4	1.8
SV	141	0	0	1.4	0.7	141	0	0	0	7.0	1.7
N	399	2	4	2.7	1.3	408	0	4	0	8.1	0.5
ACAR	4132	0	0	1.4	0.1	4123	0	0	0	7.0	1.0

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
ROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	23	0	15.7	17.2	-7.0
DBBH	12	Z	100	23	1	15.8	16.0	-2.7
DBBL	00	Z	100	1	0	0.0	7.0	-7.0
DBLK	00	Z	100	1	0	0.0	17.0	-17.0
DBLK	12	Z	100	22	0	18.8	20.2	7.3
EHOA	12	Z	100	2	0	2.5	28.6	-28.5
FNOR	00	Z	100	15	0	10.0	14.2	10.1
FNOR	12	Z	100	12	0	19.4	19.7	3.2
FNOU	00	Z	100	7	0	14.3	14.8	-3.7
FNOU	12	Z	100	6	0	18.9	21.6	-10.5
FNPH	00	Z	100	17	0	15.1	18.4	-10.5
FNPH	12	Z	100	12	0	19.3	23.1	-12.8
FNRS	00	Z	100	18	0	13.7	14.2	-3.7
FNRS	12	Z	100	15	0	11.9	22.3	-18.9
JBOA	00	Z	100	1	0	0.0	54.0	-54.0
JDWX	00	Z	100	1	0	0.0	17.0	17.0
JFDG	00	Z	100	1	0	0.0	53.0	53.0
JIVB	00	Z	100	1	0	0.0	5.0	-5.0
LDWR	00	Z	100	31	0	9.9	9.9	-0.6
LDWR	12	Z	100	30	0	9.9	17.9	-15.0
OXVH2	00	Z	100	20	0	17.2	20.3	-10.8
OXVH2	12	Z	100	17	0	13.9	13.9	0.6
OXYH2	00	Z	100	20	0	10.0	15.2	-11.4
OXYH2	12	Z	100	18	0	14.6	14.6	0.6
SHIPAF	00	Z	100	9	0	25.7	42.3	33.7
SHIPAF	12	Z	100	6	0	11.7	39.3	37.5
UCKZ	00	Z	100	11	0	14.8	37.3	34.2
UCKZ	12	Z	100	1	0	0.0	5.0	5.0
V2EZ	00	Z	100	1	0	0.0	5.0	-5.0
V2EZ	12	Z	100	1	0	0.0	5.0	-5.0
V2VM	00	Z	100	13	0	13.2	14.8	-6.6
V2VM	12	Z	100	11	0	12.1	14.1	-7.2
WTEC	00	Z	100	2	0	6.0	23.8	-23.0
WTEC	12	Z	100	1	0	0.0	16.0	-16.0
XXBA	12	Z	100	3	0	14.5	23.4	18.3
XXXX	00	Z	100	1	0	0.0	37.0	-37.0
XXXX	12	Z	100	1	0	0.0	12.0	-12.0
03953	00	Z	100	31	0	11.8	14.0	7.5
03953	12	Z	100	31	0	11.6	11.7	-0.2
04018	00	Z	100	30	0	16.3	16.5	2.3
04018	12	Z	100	29	0	19.9	22.2	9.7
04220	00	Z	100	31	0	14.1	15.5	6.6
04220	12	Z	100	31	0	15.7	17.8	8.5
04270	00	Z	100	30	0	10.4	13.9	-9.3
04270	12	Z	100	30	0	14.8	14.8	1.2
04339	00	Z	100	10	0	22.3	22.8	-4.6
04339	12	Z	100	13	0	14.3	14.3	0.8
04360	00	Z	100	3	0	6.9	7.1	1.7
04360	12	Z	100	2	0	10.5	10.8	2.5
08001	00	Z	100	29	0	15.1	15.9	-4.9
08001	12	Z	100	27	0	9.0	18.5	-16.2
08508	00	Z	100	31	0	20.4	20.4	-0.4
08508	12	Z	100	31	0	18.6	22.4	-12.5
08522	00	Z	100	30	0	9.5	15.5	12.2
08522	12	Z	100	29	0	10.1	10.1	-0.3
60020	00	Z	100	28	0	17.6	27.9	21.6
60020	12	Z	100	30	0	16.6	17.6	5.8
71600	00	Z	100	30	0	12.6	15.2	-8.4
71600	12	Z	100	31	0	10.2	16.4	-12.8
72201	00	Z	100	27	0	16.9	16.9	0.8
72201	12	Z	100	30	0	12.6	13.5	5.0

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
72402	00	Z	100	28	0	21.0	22.3	7.5
72402	12	Z	100	26	1	31.8	33.5	10.3
74494	00	Z	100	26	0	12.6	15.3	8.6
74494	12	Z	100	30	0	11.1	32.8	30.9
78016	00	Z	100	26	0	9.0	10.0	-4.3
78016	12	Z	100	25	0	12.2	13.4	-5.6

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	26	0	11.3	11.3	-0.7
DBBH	12	Z	500	25	1	13.0	13.2	-2.6
DBBL	00	Z	500	1	0	0.0	4.0	4.0
DBLK	00	Z	500	1	0	0.0	8.0	-8.0
DBLK	12	Z	500	22	0	14.5	17.5	-9.9
EHOA	12	Z	500	1	0	0.0	6.0	-6.0
FNOR	00	Z	500	15	0	11.5	14.8	9.4
FNOR	12	Z	500	12	0	10.5	11.6	4.9
FNOU	00	Z	500	7	0	8.9	8.9	-0.4
FNOU	12	Z	500	6	0	8.2	8.2	0.5
FNPH	00	Z	500	17	0	9.0	10.3	-5.1
FNPH	12	Z	500	12	0	10.5	10.5	0.6
FNRS	00	Z	500	18	0	8.0	8.1	-0.7
FNRS	12	Z	500	15	0	8.2	8.8	-3.1
JBOA	00	Z	500	1	0	0.0	3.0	3.0
JDWX	00	Z	500	1	0	0.0	16.0	16.0
JFDG	00	Z	500	1	0	0.0	6.0	6.0
JIVB	00	Z	500	1	0	0.0	16.0	-16.0
LDWR	00	Z	500	31	0	11.3	11.7	3.0
LDWR	12	Z	500	30	0	8.3	8.8	-3.0
OXVH2	00	Z	500	20	0	15.2	15.3	-1.6
OXVH2	12	Z	500	20	0	12.3	12.3	-0.4
OXYH2	00	Z	500	22	0	15.8	16.7	-5.5
OXYH2	12	Z	500	19	0	20.7	21.8	-6.7
SHIP	00	Z	500	1	0	0.0	43.0	43.0
SHIPAF	00	Z	500	12	0	11.6	22.5	19.3
SHIPAF	12	Z	500	7	0	11.0	17.9	14.1
UCKZ	00	Z	500	11	0	15.1	17.8	9.5
UCKZ	12	Z	500	1	0	0.0	26.0	26.0
V2EZ	00	Z	500	1	0	0.0	4.0	4.0
V2EZ	12	Z	500	1	0	0.0	6.0	-6.0
V2VM	00	Z	500	13	0	8.7	11.2	-7.2
V2VM	12	Z	500	11	0	5.7	8.0	-5.5
WTEC	00	Z	500	2	0	5.0	22.6	-22.0
WTEC	12	Z	500	1	0	0.0	32.0	-32.0
XXBA	12	Z	500	4	0	40.3	44.1	-17.8
XXXX	00	Z	500	1	0	0.0	21.0	-21.0
XXXX	12	Z	500	1	0	0.0	1.0	-1.0
03953	00	Z	500	31	0	9.1	12.8	9.0
03953	12	Z	500	31	0	8.6	9.4	3.8
04018	00	Z	500	30	0	11.7	14.8	9.1
04018	12	Z	500	29	0	8.8	9.9	4.7
04220	00	Z	500	31	0	17.0	17.5	-4.5
04220	12	Z	500	31	0	18.9	19.3	-3.8
04270	00	Z	500	31	0	11.1	11.4	2.8
04270	12	Z	500	31	0	16.3	16.5	-2.3
04339	00	Z	500	10	0	10.9	10.9	-0.3
04339	12	Z	500	13	0	16.6	18.2	-7.5
04360	00	Z	500	3	0	17.2	20.8	-11.7
04360	12	Z	500	2	0	16.0	25.6	-20.0
08001	00	Z	500	31	0	13.4	13.4	-0.9
08001	12	Z	500	30	0	9.8	11.4	-5.9
08508	00	Z	500	31	0	9.8	10.4	3.6
08508	12	Z	500	29	0	8.3	8.6	-2.4
08522	00	Z	500	30	0	7.6	10.1	6.7
08522	12	Z	500	29	0	6.5	7.3	3.3
60020	00	Z	500	28	0	9.5	18.6	16.0
60020	12	Z	500	29	0	9.4	15.9	12.9
71600	00	Z	500	30	0	8.2	9.6	-5.0
71600	12	Z	500	31	0	7.6	7.9	-2.3
72201	00	Z	500	29	0	9.4	9.5	-0.8

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
72201	12	Z	500	30	0	9.1	9.3	-2.0
72402	00	Z	500	30	0	27.5	27.7	-3.9
72402	12	Z	500	30	0	26.8	26.9	-1.2
74494	00	Z	500	30	0	6.9	6.9	-0.2
74494	12	Z	500	30	0	6.5	7.0	-2.8
78016	00	Z	500	26	0	9.2	9.3	1.3
78016	12	Z	500	23	0	11.8	13.2	6.0

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	22	0	0	0.0	-0.5	0.4
DBBH	12	V	100	24	0	0	2.1	-0.4	-0.4
DBBL	00	V	100	1	0	0	2.3	-1.8	-1.1
DBLK	12	V	100	24	0	0	2.3	0.6	-0.4
EHOA	12	V	100	1	0	0	2.1	0.5	-9.7
FNOR	00	V	100	15	0	0	2.1	-0.4	-0.4
FNOR	12	V	100	12	0	0	2.3	-0.6	0.4
FNOU	00	V	100	7	0	0	3.6	1.3	1.1
FNOU	12	V	100	6	0	0	3.6	-1.8	0.4
FNPH	00	V	100	17	0	0	3.6	-0.3	-0.9
FNPH	12	V	100	11	0	0	3.4	-1.4	-0.3
FNRS	00	V	100	16	0	0	3.0	0.3	-0.2
FNRS	12	V	100	15	0	0	3.0	0.2	0.7
JBOA	00	V	100	1	0	0	2.6	0.6	-0.8
JDWX	00	V	100	1	0	0	3.9	0.9	-2.4
JIVB	00	V	100	1	0	0	3.9	3.4	7.5
LDWR	00	V	100	31	0	0	3.9	0.7	0.1
LDWR	12	V	100	30	0	0	2.3	0.4	-0.7
OXVH2	00	V	100	20	0	0	1.8	-0.6	1.4
OXVH2	12	V	100	15	0	0	2.8	-1.9	1.1
OXYH2	00	V	100	19	0	0	2.4	0.0	0.9
OXYH2	12	V	100	18	0	0	1.6	-0.1	0.7
SHIPAF	00	V	100	4	0	25	2.0	10.7	-4.0
SHIPAF	12	V	100	4	0	0	2.0	-2.8	-0.4
UCKZ	00	V	100	11	0	0	3.1	-0.4	-0.9
UCKZ	12	V	100	1	0	0	4.4	1.0	-1.5
V2EZ	00	V	100	1	0	0	4.4	0.5	0.1
V2EZ	12	V	100	1	0	0	4.4	-0.4	1.1
V2VM	00	V	100	13	0	0	4.4	2.9	-0.5
V2VM	12	V	100	11	0	0	2.3	0.9	0.4
WTEC	00	V	100	1	0	0	3.1	2.9	0.9
WTEC	12	V	100	1	0	0	5.5	1.8	1.4
XXBA	12	V	100	3	0	33	4.2	-17.4	6.2
XXXX	00	V	100	1	0	0	4.2	-1.3	-2.1
XXXX	12	V	100	1	0	0	4.2	-2.2	5.0
03953	00	V	100	31	0	0	2.7	-0.5	1.2
03953	12	V	100	31	0	0	2.4	-0.8	1.5
04018	00	V	100	29	0	0	1.6	-0.2	-0.5
04018	12	V	100	29	0	0	2.0	-0.6	-0.4
04220	00	V	100	31	0	0	2.7	-0.2	1.2
04220	12	V	100	31	0	0	2.1	-0.4	0.5
04270	00	V	100	30	0	0	1.7	-0.9	1.0
04270	12	V	100	30	0	0	1.8	-1.5	0.6
04339	00	V	100	10	0	0	1.7	-0.3	0.2
04339	12	V	100	13	0	0	1.4	-0.4	0.6
04360	00	V	100	3	0	0	2.4	-0.8	1.9
04360	12	V	100	2	0	0	2.4	-0.1	0.5
08001	00	V	100	28	0	0	4.3	0.4	0.7
08001	12	V	100	26	0	0	3.4	-0.8	0.0
08508	00	V	100	31	0	0	3.0	1.8	0.6
08508	12	V	100	31	0	0	2.1	0.3	0.4
08522	00	V	100	30	0	0	2.3	1.4	0.2
08522	12	V	100	29	0	0	2.4	2.3	-0.9
60020	00	V	100	26	0	0	5.0	-0.8	-0.6
60020	12	V	100	30	0	0	2.1	0.2	-1.4
71600	00	V	100	30	0	0	2.1	-1.0	0.9
71600	12	V	100	31	0	0	2.1	0.7	-1.7
72201	00	V	100	27	0	0	2.5	1.9	0.9
72201	12	V	100	30	0	0	2.6	1.0	-0.2
72402	00	V	100	28	0	0	3.0	-0.7	-0.7
72402	12	V	100	27	0	0	2.9	-0.1	0.5

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
74494	00	V	100	25	0	0	3.4	-0.8	0.0
74494	12	V	100	30	0	0	1.8	-0.4	0.5
78016	00	V	100	25	0	0	3.1	0.4	-0.5
78016	12	V	100	22	0	0	2.0	0.4	0.1

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: August, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	26	0	0	0.0	-0.1	0.3
DBBH	12	V	500	26	0	0	2.8	0.3	-0.1
DBBL	00	V	500	1	0	0	3.1	1.5	-0.5
DBLK	00	V	500	1	0	0	3.1	-0.2	-1.5
DBLK	12	V	500	22	0	0	3.1	0.4	-0.8
EHOA	12	V	500	1	0	0	3.0	-0.2	-2.8
FNOR	00	V	500	15	0	0	3.0	0.1	-1.8
FNOR	12	V	500	11	0	0	3.2	-0.1	-1.9
FNOU	00	V	500	7	0	0	3.8	-1.2	-1.4
FNOU	12	V	500	6	0	0	3.8	0.0	-0.1
FNPH	00	V	500	17	0	0	3.8	-0.7	-1.8
FNPH	12	V	500	10	0	0	3.2	-0.5	-0.4
FNRS	00	V	500	16	0	0	2.4	-1.0	0.0
FNRS	12	V	500	15	0	0	2.2	-0.4	0.4
JBOA	00	V	500	1	0	0	2.7	0.6	-1.0
JDWX	00	V	500	1	0	0	1.5	-1.6	-0.1
JFDG	00	V	500	1	0	0	1.5	-1.7	-0.9
JIVB	00	V	500	1	0	0	1.5	0.5	-2.5
LDWR	00	V	500	31	0	0	1.5	0.4	0.7
LDWR	12	V	500	30	0	0	3.0	-0.3	0.5
OXVH2	00	V	500	20	0	0	2.3	-0.5	1.4
OXVH2	12	V	500	19	0	0	4.4	-0.2	0.6
OXYH2	00	V	500	21	0	0	3.8	0.0	0.4
OXYH2	12	V	500	19	0	0	2.6	0.3	0.0
SHIP	00	V	500	1	0	0	3.2	4.1	3.1
SHIPAF	00	V	500	11	0	54	3.2	-5.2	0.9
SHIPAF	12	V	500	7	0	14	8.6	1.0	-7.1
UCKZ	00	V	500	11	0	0	2.7	0.2	-1.6
UCKZ	12	V	500	1	0	0	3.3	2.4	0.6
V2EZ	00	V	500	1	0	0	3.3	1.9	-1.9
V2EZ	12	V	500	1	0	0	3.3	13.3	-5.9
V2VM	00	V	500	12	0	0	3.3	1.1	0.0
V2VM	12	V	500	10	0	0	2.5	-0.4	-0.9
WTEC	00	V	500	2	0	0	2.1	-0.3	-0.7
WTEC	12	V	500	1	0	0	3.6	1.7	-2.6
XXBA	12	V	500	4	0	50	3.5	-20.1	6.9
XXXX	00	V	500	1	0	0	3.5	-0.7	-0.8
XXXX	12	V	500	1	0	0	3.5	1.6	1.4
03953	00	V	500	31	0	0	2.7	0.1	0.2
03953	12	V	500	31	0	0	2.6	0.0	-1.2
04018	00	V	500	30	0	0	3.2	-0.7	0.4
04018	12	V	500	29	0	0	2.7	0.2	-0.2
04220	00	V	500	31	0	0	4.8	0.0	1.4
04220	12	V	500	31	0	0	3.8	0.8	-0.2
04270	00	V	500	31	0	0	3.8	1.4	0.6
04270	12	V	500	31	0	0	5.0	0.9	0.2
04339	00	V	500	10	0	0	2.9	1.1	-0.3
04339	12	V	500	13	0	0	3.2	-1.2	-0.7
04360	00	V	500	3	0	0	3.9	-2.5	2.1
04360	12	V	500	2	0	0	3.9	-0.7	-2.9
08001	00	V	500	30	0	0	4.0	0.3	0.0
08001	12	V	500	29	0	0	2.4	0.0	0.1
08508	00	V	500	31	0	0	2.8	0.0	0.4
08508	12	V	500	29	0	0	2.3	-0.8	-0.3
08522	00	V	500	30	0	0	2.1	0.6	0.8
08522	12	V	500	29	0	0	2.9	-0.5	-0.7
60020	00	V	500	28	0	0	3.6	0.2	1.0
60020	12	V	500	29	0	0	2.9	-0.2	-0.6
71600	00	V	500	29	0	0	2.7	-0.5	-0.2
71600	12	V	500	31	0	0	3.9	0.9	0.5
72201	00	V	500	29	0	0	3.1	0.5	-0.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
72201	12	V	500	30	0	0	1.9	0.0	-0.9
72402	00	V	500	30	0	0	2.6	0.6	-0.1
72402	12	V	500	30	0	0	2.7	0.0	0.7
74494	00	V	500	30	0	0	2.6	-0.7	0.3
74494	12	V	500	30	0	0	2.0	0.2	0.0
78016	00	V	500	26	0	0	3.4	-0.2	-0.1
78016	12	V	500	23	0	0	2.4	0.0	0.2

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45